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AGRICULTURAL RESEARCH IN INDONESIA,
THE PHILIPPINES, BANGLADESH, SOUTH KOREA AND INDIA:
A DOCUMENTARY HISTORY

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1. INTRODUCTION

The purpose of this paper is to review the development of the agricultural research systems in five Asian countries: Indonesia, the Philippines, Bangladesh, South Korea and India. The research systems of Indonesia and the Philippines receive special attention, while the Indian system receives less thorough treatment owing to limited time and resources for this study.¹

It should be noted from the outset that data on the development of agricultural research systems tends to be fragmentary. In part this results from fragmentation of the research system itself, which typically includes several government agencies, agricultural universities and the private sector. It also results from periodic reorganizations of the research systems, and from the plethora of funding sources. In Indonesia, for example, 17 foreign donors provided financial assistance to 16 agricultural research organizations between 1968 and 1977.

This paper devotes particular attention to the role played by the United States Agency for International Development (USAID) and its predecessor agencies.

An introductory chapter presents inter-country comparisons of the investment in agricultural research in Asia. Subsequent chapters are devoted to each of the five countries. These chapters trace the history of the development of the national research systems. Their organization,

¹The Indian case is however relatively well documented elsewhere. See bibliography.

funding, manpower and, insofar as is possible, their allocation of resources to different regions, commodities, and disciplines. Available data are summarized and gaps in the available information are identified. A final chapter reviews the rather scant literature on the effects of the research systems upon agricultural productivity and upon income distribution. Sources of documentation are listed in the bibliographies at the end of each chapter.

2. AGRICULTURAL RESEARCH IN ASIA: AN OVERVIEW

Table 2.1 presents time series data on agricultural research expenditures and manpower in Asia, as summarized by Boyce and Evenson (1975). These data represent rough approximations but they have the advantage of providing comparable inter-country measures of research investment drawing upon a wide range of primary sources.

Drawing upon a variety of sources, including the Boyce-Evenson study, Oram (1978) reports estimates of research expenditures and manpower in 1975 for 65 countries. Data for Indonesia, the Philippines, Bangladesh, South Korea and India are presented in Table 2.2.

Data on the commodity orientation of research is notoriously difficult to obtain. As a measure of commodity orientation, Boyce and Evenson report the number of publications deemed of sufficient scientific and economic importance by the editorial boards of three international abstracting journals (Plant Breeding Abstracts, Dairy Science Abstracts and Biological Abstracts) to warrant abstraction. The number of publications provides an imperfect measure of commodity orientation. Oram notes the differential impact of the "publish or perish" syndrome, the lack of indigenous scientific journals in some countries, and the possibility that the abstracting journals, published in the United Kingdom and the United States, may favor commodities of interest to developed countries. In the absence of data on actual expenditures by commodity, however, the publications measure provides a useful indication of the direction of the research effort. Data for four of the countries under study (excluding Bangladesh) are presented in Table 2.3.

TABLE 2.1

TABLE 2.1. AGRICULTURAL RESEARCH EXPENDITURES AND MANPOWER IN ASIA
(A Constructed Time Series, 1959-1974)

Country	Expenditures (000 constant 1971 US\$)						Manpower (SMY's)					
	1959	1962	1965	1968	1971	1974	1959	1962	1965	1968	1971	1974
Cyprus	180	300	351	428	450	464	15	18	20	24	37	52
Iran	1802	3172	5306	7112	10400	14615	170	220	270	327	440	500
Israel	4926	6007	6957	8334	7800	9616	5	10	15	40	75	110
Turkey	2015	2615	4127	7223	9100	9765	55	110	250	360	550	580
Syria	120	300	519	915	1150	1302	150	200	397	440	485	540
Sub-Total	9071	12422	17263	24042	28500	33090	395	558	952	1191	1587	1782
Adjustment for missing countries ¹	1451	1988	2762	3847	4560	5291	63	89	152	191	254	285
6.1 West Asia												
Sub-Regional Total	10522	14410	20025	27889	33060	38381	458	647	1104	1382	1842	2067
Bangladesh	—	—	—	—	1000	1159	—	—	—	—	150	190
Sri Lanka	1322	1682	2122	2667	2700	2411	50	65	80	95	105	130
India	10173	12616	14749	16116	21000	26035	1150	1160	1450	1800	1950	2150
Pakistan	961	1412	2122	2415	2000	2931	120	160	270	350	250	280
Sub-Total	12856	15740	18983	21558	30700	31619	1320	1405	1800	2245	2455	2750
Adjustment for missing countries ²	771	914	1159	1293	1842	1899	79	84	108	135	147	165
6.2 South Asia												
Sub-Regional Total	13627	16684	20122	22851	32542	33546	1399	1489	1908	2380	2602	2915
Indonesia	240	961	2004	2889	3700	3417	15	70	140	240	340	380
Malaysia	1442	2523	3891	4111	5006	4852	40	90	150	156	195	240
Philippines	1802	3684	5895	6331	5850	5207	200	300	400	500	600	620
Thailand	661	1802	3181	4111	5009	4882	150	250	350	475	600	725
South Vietnam	60	120	236	333	350	297	5	10	15	20	20	20
Sub-Total	4205	9010	15210	17776	19960	18685	410	720	1055	1391	1755	1985
Adjustment for missing countries ³	378	811	1369	1600	1791	1682	37	65	95	125	158	179
6.3 Southeast Asia												
Sub-Regional Total	4583	9821	16579	19378	21691	20367	447	785	1150	1516	1913	2164
6.4 China												
Sub-Regional Total	9612	30037	58955	83340	95000	110632	1250	4000	8000	111000	13500	16000
Hong Kong	60	78	83	83	85	81	9	8	8	8	10	12
Japan	57672	84105	142671	178903	245000	260352	7200	8500	10090	11500	13700	14000
South Korea	1081	1201	1415	1945	2400	2441	300	320	340	450	550	650
Taiwan	841	1382	1651	1933	2300	2359	250	275	310	350	375	400
Sub-Total	59654	86766	145820	182864	249785	265233	7759	9105	10658	12308	14635	15062
Adjustment for missing countries ⁴	597	868	1458	1829	2498	2652	78	91	107	123	146	151
6.5 East Asia												
Sub-Regional Total	60251	87634	147278	184693	252283	267885	7837	9194	10765	12431	14781	15213
REGIONAL TOTAL	98595	158586	262959	338151	434576	470816	11391	16115	22927	28709	34637	38359

¹ West Asia adjustment estimates (% of sub-totals):

Iraq	2
Jordan	2
Lebanon	6
Others	6
	—
Total	16

² South Asia adjustment estimates (% of sub-totals):

Afghanistan	2
Nepal	3
Others	1
	—
Total	6

³ Southeast Asia adjustment estimates (% of sub-totals): Missing countries—Burma, Cambodia, Laos, Portuguese Timor, Singapore, North Vietnam.⁴ East Asia adjustment estimates (1% of sub-totals): Missing countries—Mongolia, North Korea.

Source: Boyce and Evenson (1975), pp. 29-31.

TABLE 2.2: RESEARCH INVESTMENT IN FIVE ASIAN COUNTRIES, 1975

Country	Agricultural research expenditures (\$ thous.)	Number of research scientists	Research expenditures per SMY (\$ thous.)	Research scientists per million agricultural population	Research expenditures as percent of agricultural GDP	Agriculture's share of GDP (%)
Indonesia	2,521	211	11.95	2	0.02	33
Philippines	22,340	2,000	11.17	91	0.51	28
Bangladesh	12,500	1,555	8.04	25	0.31	56
Korea (Republic)	4,740	948	5.00	61	0.10	25
India	36,218	3,966	9.13	10	0.12	43

Source: Gram (1978), p. 31.

Not all publications have the same "price," in the United States, for example, dairy publications cost only one-third as much, in terms of scientist man-years, as maize and sorghum publications. For the United States, Boyce and Evenson report the following ratio of SMYs per publication:

Wheat and Barley	1.61
Maize and Sorghum	1.00
Rice	1.96
Sugar Crops	2.94
Potatoes and Tomatoes	1.45
Cotton	3.33
Coffee, Tea, Cacao	1.20
Dairy	.34
Other Livestock	2.00
Soil Science	1.20
Plant Pathology	.80
Plant Physiology	1.00

Using these weights, SMYs engaged in research, by commodity, can be estimated from the publication's data. The resulting measures for the four Asian countries are presented in Table 2.4.

Measures of commodity orientation of research can be compared to the share of each commodity in national agricultural output. Boyce and Evenson computed a "research commodity congruity index," derived from the sum of the squared differences between the share of the commodity in total value of agricultural product (C_i) and its share in publications weighted to standardize for scientist input (P_i):

$$C = 1 - \sum_i (C_i - P_i)^2$$

Thus, $C = 1$ if research and commodity composition are perfectly matched; the greater the divergence between the two, the lower the index. Results, by region, are reported in Table 2.5. As Ruttan (1980) has pointed out,

TABLE 2.3: AVERAGE ANNUAL PUBLICATIONS

Country	Commodity		Rice	Sugar crops	Potato	Tomato	Pulses	Cotton	Tea, cacao coffee tobacco	Phyto-pathol.	Soil science	Total crop oriented	Plant phys.	Dairy	Live-stock oriented	Total
	Wheat & barley	Maize & sorghum														
Indonesia																
1948-1954	0	1	5	1	1	0	0	0	1	1	2	1	1	0	0	15
1955-1961	8	1	1	1	0	0	0	0	1	1	2	15	1	1	1	18
1962-1968	0	0	1	2	0	0	0	0	1	0	1	5	0	5	2	13
1969-1973	0	0	1	2	0	0	0	0	1	1	1	6	0	5	2	13
Philippines																
1948-1954	0	3	6	1	0	0	0	0	1	1	0	12	0	1	5	18
1955-1961	0	4	8	1	0	0	0	0	1	4	1	19	1	2	10	32
1962-1968	1	2	30	6	1	0	1	1	3	8	2	55	3	2	10	70
1969-1973	0	2	27	2	1	0	1	0	2	15	2	52	9	2	7	70
South Korea																
1948-1954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955-1961	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1962-1968	1	0	5	0	0	0	1	0	0	0	0	0	2	0	0	9
1969-1973	2	1	7	0	1	0	1	0	0	7	4	0	11	1	2	37
India																
1948-1954	10	20	37	36	11	2	10	51	7	42	18	14	32	49	24	349
1955-1961	24	30	39	35	9	4	19	56	12	60	27	5	124	64	23	526
1962-1968	36	52	72	37	22	7	27	62	19	150	47	0	217	88	68	904
1969-1973	97	96	90	22	12	11	45	30	14	275	93	0	255	134	104	1278

Source: Boyce-Evenson (1975), pp. 224-225.

TABLE 2.4

ANNUAL RESEARCH SCIENTIST MAN-YEARS, BY COMMODITY GROUP, AS DERIVED FROM PUBLICATIONS DATA

Country	Commodity										Dairy	Live- stock oriented	
	Wheat & barley	maize & sorghum	Rice	Sugar crops	Potato	Tomato	Cotton	Tea, cacao coffee tobacco	Phyto- pathol.	Soil science			Plant phys.
Indonesia													
1948-1954	0	1	10	3	1	0	0	1	2	2	1	0	0
1955-1961	13	1	2	3	0	0	0	1	1	2	1	0	2
1962-1968	0	0	2	6	0	0	0	1	0	1	0	2	4
1969-1973	0	0	2	6	0	0	0	1	1	1	0	2	4
Philippines													
1948-1954	0	3	12	3	0	0	0	1	1	0	0	0	10
1955-1961	0	4	16	3	0	0	0	1	3	1	1	1	20
1962-1968	2	2	59	18	1	0	3	4	6	2	3	1	20
1969-1973	0	2	53	6	1	0	0	2	12	2	0	1	14
South Korea													
1948-1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955-1961	0	0	0	0	0	0	0	0	0	0	1	0	0
1962-1968	2	0	10	0	0	0	0	0	0	0	2	0	0
1969-1973	3	1	14	0	1	0	0	0	6	5	11	0	4
India													
1948-1954	16	20	73	106	16	3	170	8	34	22	32	17	48
1955-1961	39	30	77	103	13	6	186	14	42	32	124	21	46
1962-1968	58	52	141	109	32	10	206	23	120	56	217	30	128
1969-1973	156	96	176	65	17	16	100	17	220	112	255	46	208

a perfect congruity or "parity" is not necessarily desirable. Opportunities for productive research may not be equivalent in each commodity or resource category; moreover the value of a scientific or technical innovation is not necessarily proportional to the value of the commodity or the contribution of a particular resource to agricultural production. Nonetheless, Table 2.5 clearly indicates that more developed regions and higher income countries generally have a higher level of research commodity congruity than less developed regions and lower income countries. This may reflect undesirable distortions, from a social point of view, e.g., greater attention to export crops as opposed to subsistence crops.

TABLE 2.5

RESEARCH-COMMODITY CONGRUITY INDEX

Sub-Region	1948-54	1955-61	1962-68	1969-74	1948-74
Northern Europe	.838	.793	.907	.924	.866
Central Europe	.813	.719	.767	.868	.792
Southern Europe	.805	.773	.819	.786	.796
Eastern Europe	.688	.663	.824	.871	.762
USSR	.885	.845	.808	.731	.817
North America	.954	.953	.967	.935	.853
Oceania	.878	.757	.920	.925	.915
Temperate South America	.506	.732	.784	.769	.698
Tropical South America	.890	.788	.916	.908	.873
Central America & Caribbean	.592	.590	.882	.776	.695
North Africa	.674	.571	.648	.749	.695
West Africa	.668	.820	.638	.619	.686
East Africa	.428	.582	.752	.796	.640
South Africa	.679	.884	.900	.936	.850
West Asia	.907	.873	.826	.908	.879
Southeast Asia	.946	.703	.819	.720	.795
South Asia	.799	.785	.857	.906	.837
East Asia	.334	.792	.931	.884	.735
Income Group					
I (> \$1750)	.842	.832	.870	.905	.862
II (1001-1750)	.736	.680	.827	.850	.773
III (401-1000)	.732	.769	.830	.833	.791
IV (150-400)	.669	.734	.824	.819	.763
V (< 150)	.719	.627	.705	.748	.699

Source: Boyce-Evenson (1975), p. 97.

SOURCES:

- Boyce, James K. and R. Evenson, 1975. National and International Agricultural Research and Extension Programs, New York: Agricultural Development Council.
- Oram, Peter, 1978. "Current and Projected Agricultural Research Expenditures and Staff in Developing Countries," Working Paper 30, IFPRI, 6 November.
- Ruttan, Vernon W., 1980. "Institutional Factors Affecting the Generation and Diffusion of Agricultural Technology: The Role and Performance of National Agricultural Research Systems: A Research Guide," Department of Agricultural and Applied Economics, University of Minnesota, draft, June 15.

CHAPTER 3. AGRICULTURAL RESEARCH IN INDONESIA

3.1 Agricultural research in the colonial period.

In 1876, the Economic Garden (Cultuurtuin) was established in Bogor, West Java, as a department of the State Botanical Garden (Island Plantentuin, founded in 1817) concerned with agricultural research. A number of crop plants introduced at the Economic Garden - including rubber, coffee, tea, cocoa and tobacco - later became important export crops. (Mangundojo, 1971). In succeeding years, estates founded their own experimental stations to conduct research on specific crops. The first was Proefstation Oost Java (POJ), a sugarcane experiment station established in East Java in 1885 in the wake of a disastrous virus disease attack upon the 1883-84 sugarcane crop. By 1900, POJ had produced new, commercially important varieties of sugarcane; the station went on to become "the world's leading producer of important varieties." (Evenson and Kiselev, 1975, p. 36).

The General Agricultural Research Station (Het Algemeen Proestation Voor Landbouw) was established at Bogor in 1881. It incorporated the Economic Garden, which was thereby separated from the State Botanical Garden and placed under the Ministry of Agriculture, Industry and Trade, and the Institute for Soil Research and Geological Laboratory (founded in 1890), the Institute for Rice and Secondary Crops (1905) and the Laboratory for Plant Disease (1912). (USOM/Indonesia, 1957).

The domain of the Central Agricultural Research Station was limited to crops. In addition, a veterinary research institute was founded in 1908; a forestry research institute in 1913; a fishery research laboratory in 1923; and a chemical research bureau was set up in 1909. All were located in Bogor, but each worked separately under the control of the

Ministry of Agriculture, Industry and Trade. (Mangundojo, 1971).

A further reorganization in 1930 provided for regional experimental work and for closer links to the extension service. (USOM/Indonesia, 1957).

In 1939 Germany occupied ^{the Netherland} ~~Indonesia~~, severing communications with ~~the Netherlands~~. ^{Indonesia.} The occupation led to intensified agricultural research to meet wartime demands. By 1941 there were five state research institutes and eight private estate crop research institutes:

LIST OF AGRICULTURAL RESEARCH INSTITUTES IN SEPTEMBER 1941

Ministry of Agriculture, Industry and Trade

1. General Agricultural Research Station, Bogor
2. Veterinary Research Institute, Bogor
3. Forestry Research Station, Bogor
4. Division of Inland Fisheries, Bogor
5. Division of Chemical and Technological Research, Bogor

Research Institutes for Estate Crops (Private Institutions)

6. West Java Research Station, (tea, quinine, rubber), Bogor
7. Netherlands — Indisch Institute for Rubber Research (rubber technology), Bogor
8. Central and East Java Research Station (coffee, cocoa), Malang
9. Besoeki Research Station (rubber, tobacco), Djember
10. Research Station for the Java sugarcane industry, Pasuruan
11. General Research Station of the A.V.R.O.S. (Rubber, tea, palm oil), Medan
12. Research Station Deli (tobacco), Medan
13. Research Station for Vorstenland's tobacco, Klaten

Source: Mangundojo, 1971, p. 45.

The Rubber Research Institute was financed by a cess tax on rubber; the other private institutions were funded by associations of big plantation companies.

The total number of research workers was 156, of whom 86 worked in the state institutes and 70 in private institutions. All except one of the researchers were expatriates.

During the Pacific War the Japanese occupied Indonesia; by 1943 almost all of the Dutch researchers had been imprisoned, and Indonesian research assistants were promoted to research positions under Japanese direction. During the post-war independence struggle (1945-50), research more or less ground to a halt.

3.2 Agricultural research, 1950-1969

After 1960, many Dutch researchers returned to Indonesia to work at their former institutes. At the time, Indonesia had virtually no trained manpower of its own for agricultural research; the total number of college graduates in the archipelago from 1920-1940 was only 230. (ARD, 1978). The first institute for higher education in agriculture was founded in 1941, but it was closed soon thereafter by the Japanese invasion. During the 1950s, the training of scientific manpower, at the Bogor Agricultural University (Institut Pertanian Bogor, IPB), at Gadjah Mada University (GMU), Jogjakarta, and abroad was a priority. In addition, post-secondary school institutions called akademi were established to provide training to research workers. In the late '50s, however, political conflicts between Indonesia and the Netherlands resulted in the departure of most Dutch researchers, before adequate Indonesian replacements had been trained.

The faculties of agriculture and veterinary medicine were modelled on the Dutch institutes in Wageningen. Their purpose was to train scientists

and officials: "at no time was it thought that they would teach farmers ..."
Most students were under government-stipend appointment; almost none of them
came from village life or agricultural experience." (Beers, 1971, p. 10).
Research and extension were not considered faculty responsibilities.

Research under the Ministry of Agriculture was concentrated in Java,
where 63% of Indonesia's people live. In 1957, 26 of the 31 substations
of the General Agricultural Research Station were located in Java; two were
in Sumatra and three in Sulawesi. These substations, and their crop respon-
sibilities, are listed in Table 3.1.

Between 1950 and 1970, the ICA and subsequently USAID funded three
projects in Indonesia which involved agricultural research and/or agri-
cultural education. These are listed in Table 3.2.

Table 3.2: U.S. Assistance to Agricultural Research & Education
in Indonesia, 1955-1970

<u>Project No.</u>	<u>Title</u>	<u>Years</u>	<u>Obligation (\$ Thous.)</u>
497-0052	Gadjah Mada University	1955-58	521
497-0088	Development of Agri- cultural Colleges	1956-70	4,716
497-0112	Agricultural Extension and Experiment Stations	1951-63	2,544

Source: PAISHIST data bank & USAID

The loan for agricultural extension and experiment stations primarily
involved extension and training. ICA specialists in plant diseases, plant
quarantine, entomology, agronomy and corn breeding were assigned to the
Bogor Experiment Station, but they did little actual research: "the

Table 3:1: General Agricultural Research Station (Bogor)
Substations as of January 1957:

Name	Location	Area (ha)	Altitude (m)	Crops
<u>West - Java</u>				
1. Singamorta	Serang	7,5	25	rice
2. Tjitajam	Depok	58	75	rice and other annual crops
3. Tjibirong	Bogor	65	125	perennial crops
4. Economic Garden	Bogor	40	240	perennial crops
5. Tjikaumeuh	Bogor	20	240	annual crops
6. Muira	Bogor	40	270	various experiments with annual crops: Propagation of selected seeds
7. Segunuag	Patjet	1	1100	potatoes and vegetables
8. Gunung Putri	Tjipanas	5	1500	do.
9. Margahaju	Lembang	40	1250	potatoes
10. Kuningan	Tjirebon	30	300	annual crops
11. Tjikampek	Tjikampek	5	50	rice, annual & perennial crops
12. Pusaka Negara	Pamanukan	48	5	rice, annual & perennial crops
13. Riung Cunung	Pengalengan	5	1500	potatoes, perennial crops
<u>Mid - Java</u>				
14. Muktihardjo	Pati	90	10	kapok
15. Midjer	Smarang	3	250	perennial crops
16. Djakenan	Blora	30	-	rice, annual crops
<u>East - Java</u>				
17. Ngale	Ngawi	47	50	rice
18. Sumberradjo	Bodjonegoro	25	15	tobacco
19. Modjosari	Modjokerto	30	20	maize (corn) & soybeans
20. Kendalpajak	Malan	30	450	rice
21. Muneng	Probolinggo	30	10	annual crops (drought resistance)
22. Genteng	Banjuwangi	30	50	rice
23. Kali Pare	Malang Selatan	5	300	perennial crops
24. Djambe Cide	Kepandjen	10	350	do.
25. Sukapura	Tengger (Prehalinggo)	3	1000	do.
26. Sempolan	Djember	5	450	do.
<u>Sumatra</u>				
27. Sukarami	Solok (Mid-Sumatra)	50	950	rice, annual crops perennial crops
28. Gurgur	Balige (North Sumatra)	55	1200	do.
<u>Sulawesi</u>				
29. Mapanget	Menado	50	35	coconut, cacao, cloves
30. Sunggumipane	Makassar	10	25	annual crops
31. Bentebilli	Berto-Borto	20	100	perennial crops

Source: USOM/Indonesia, 1957, pp. 9 - 10

specialists have not attempted to conduct the experimental work except where this had to be done to reach an essential goal, but have followed a training program in their respective lines of work. The trainees have been largely young men with approximately a high school education. There were no Indonesian college graduates available." (USOM/Indonesia, 1957).

Even after the departure of the Dutch researchers, direct U.S. involvement in agricultural research remained quite limited. In 1961, there were only four ICA specialists involved in R & D activities under the Indonesian Department of Agriculture: a water resources engineer, a soils specialist, a pest control specialist and a seed technologist. An end-of-tour report by the ICA's Chief Food & Agricultural Officer in Djakarta, written in August 1961, notes that within the ICA there were "strong feelings that little is accomplished in ICA cooperation with the present Agricultural Research organization." **Concerning agricultural assistance in general the report notes:**

Perhaps the most important factor which limits high performance levels by foreign technicians is the unwillingness on the part of the host country government administrators to allow foreign technicians any major participation in management and administrative responsibilities in carrying out project activities.

In agricultural research, in particular, the report refers to "a number of exasperating situations," but it mentions hopefully that "there has been under consideration for some time some major reorganizational plans for the Agricultural Research Organization." In this connection, it refers to a report by John Tauber, Chief of the FAO Mission, and Ralph Allee of the Social and Economic Council, on a proposed reorganization of the Indonesian

gricultural research services.^{1/} "Consideration and some action" was anticipated as a result of the Ta ber-Allee report. (Birdsall, 1961).

Subsequent years did see many organizational changes in agricultural research; for example the establishment of the Central Research Institute for Agriculture (CRIA) in Bogor from six separate institutes in 1966.

Indirect U.S. involvement in agricultural research, via training and educational programs, was more substantial. As of 1961, over 500 Indonesians had received agricultural training in U.S.

bilateral assistance programs; most worked in the Department of Agriculture, largely, it seems, in administrative positions. (Birdsall, 1961). From 1955-58, GMU received a relatively small amount of U.S. assistance (\$521,000). The major U.S. project was for "Development of Agricultural Colleges;" it involved expenditures of \$4.7 million over the period 1956-1970.

The main component of this loan was the University of Kentucky affiliation with the IPB. The first Kentucky personnel went to Bogor in 1957; over the next nine years 47 Kentucky scientists would serve in Bogor, eight to sixteen at any given time. Of the 151 university contracts in the U.S. foreign aid program up to 1964, only three involved as large a commitment of dollars as the Kentucky-IPB affiliation. (Beers, 1971). Again, the principal task of the U.S. staff was training. Their limited involvement in research may be gauged from the following passage, drawn from Beers' account of the Kentucky program:

Seventeen IPB faculty members received rupiah research funds from the ministry in December 1962 in a move that caught Kenteam uninformed. They were generally delighted at this stimulation of research, but

^{1/} This report may contain relevant historical material, but it could not be located in Washington.

the invitation to counsel with the awardees and help them use the research money came a bit late. The IPB recipients had already chosen their problems and started their procedures ... it was after the fact of the awards that Kenteam members were asked to help. They did, indeed, proffer their services, but some of their suggestions were taken as criticism. Some of the seventeen projects were completed, some were done partially, and some not at all. (Beers, 1971, pp. 102 - 103).

In addition to training at Bogor, a number of IPB staff were sent to the U.S. for graduate training; over 80 Indonesians received M.S. degrees and over 10 received Ph.D.s. (Indonesian Department of Agriculture, 1969).

3.3 The Joint Agriculture Research Survey, 1969

The political events which brought the present regime to power set the stage for greater U.S. involvement in agricultural research in Indonesia. In June 1968, a Science and Food Workshop was held in Djakarta, under the joint auspices of the Indonesian Institute for Science (Lembaga Ilmu Pentgetahuan: LIPI) and the U.S. National Academy of Sciences. It recommended that a survey of agricultural research in Indonesia be conducted by a joint team of scientists from Indonesia and abroad. The Indonesian Ministry of Agriculture subsequently requested USAID assistance in the survey, and in June-July 1969 a joint team, led by Dr. Ir. Sutardi Mangundojo of IPB and Dr. Ralph Cummings of North Carolina State University visited Indonesia.^{2/}

The Report of Survey and Recommendations on Organizations, Systems, and Requirements for Research in Agricultural and Related Activities in Indonesia (Djakarta: July 18, 1969) found that agricultural research was badly fragmented, poorly staffed and underpaid:

- a. Agricultural research activities are badly fragmented with no overall mechanism to determine priority of programs or coordination of effort.

^{2/} In total, the team was comprised of 11 Indonesian scientists, 5 Americans, 1 Indian and 1 Dutchman.

b. In many cases the burden of routine duties in research installations make impossible any effective research program.

c. Each Directorate General in the Ministry of Agriculture maintains its own extension service and regulatory activities, and there is no effective coordination of the programs of the various Directorates.

d. Responsibility for agricultural education at the university level rests with the Ministry of Education and at the high school level and academy level with the Ministry of Agriculture. There is no effective coordination of these programs.

e. No official mechanism exists for coordination of agricultural research, extension and educational activities. In some instances, personal friendships do secure coordination of programs.

f. The organization pattern of agricultural research results in poor utilization of laboratory space and equipment.

g. Most of the research and university laboratories and libraries have seriously deteriorated over the last several years due to lack of funds for supplies, equipment, books, periodicals, etc.

h. The supply of trained professional Indonesian agriculturalists is very small in relationship to the needs.

i. The very low salary scale forces many professional agriculturalists to devote much of their time to non-professional activities in order to provide a living for their families.

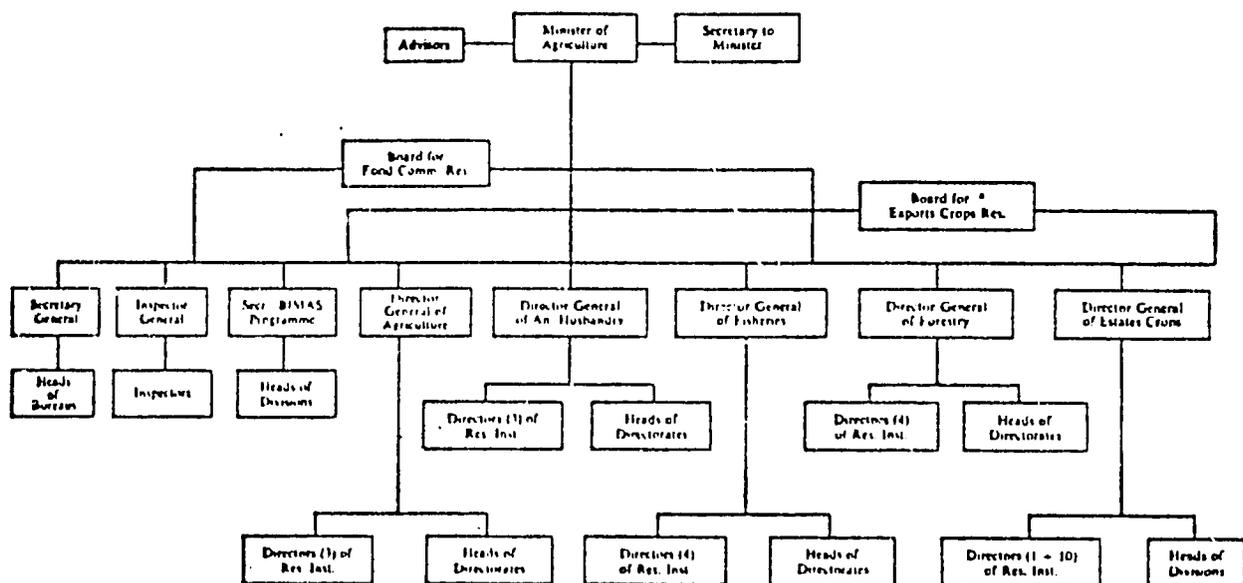
j. The fragmented patterns of agricultural research, extension and higher education do not enable good use of the available professional manpower.

k. Indonesian professional agriculturalists demonstrate a profound loyalty to their country and dedication to their work but this loyalty and dedication is slowly being eroded due to poor working conditions and inadequate professional opportunities.

l. If the goals of the Five-Year Plan are to be met, agricultural research must be strengthened by providing a more effective organizational pattern, by making better use of the total professional agricultural manpower, by strengthening library and laboratory resources, and by developing research programs which will command the respect and support of foreign donors of technical assistance. (Report, pp. 46 - 48).

To overcome these problems, the Team recommended the creation of an Indonesian Agricultural Research Organization (IARO) at the national level, which would group together the various government research institutes, which were at the time under five separate Director Generals within the Ministry of Agriculture (See Figure 3.1). At the time, there were 15 major agricultural research institutes under the Ministry of Agriculture, 3 under other ministries and 11 for estate crops, mostly under the various Government Estate Enterprises (P.N.P.'s). (See Table 3.3 and 3.4). The report also recommended 1) the launching of a number of national coordinated research projects; 2) manpower development; 3) development of provincial research stations; 4) the forging of strong links between research, education and extension; 5) greater coordination of foreign assistance; 6) a master plan for a new National Agricultural Research Center at Bogor. (Report, pp. 57 - 58).

Figure 3.1: ORGANIZATION CHART, MINISTRY OF AGRICULTURE, 1971



* Established
April 1971

Source: Mangundojo, 1971, p. 49

Table 3.3. LIST OF STATE RESEARCH INSTITUTES RELATING TO AGRICULTURE,
IN JULY 1969

Ministry of Agriculture

Directorate General of Agriculture

1. Central Research Institute for Agriculture, Bogor
2. Soil Research Institute, Bogor
3. Horticultural Research Institute, Djakarta

Directorate General of Forestry

4. Forest Research Institute, Bogor
5. Forest Products Research Institute, Bogor
6. Institute for Chemical Research of Forest Products, Bogor
7. Forest Exploitation Research Institute, Bogor

Directorate General of Fisheries

8. Research Institute for Inland Fisheries, Bogor
9. Research Institute of Marine Fisheries, Djakarta
10. Institute for Fisheries Boats Technology, Djakarta
11. Institute of Fish Technology, Djakarta

Directorate General of Animal Husbandry

12. Animal Husbandry Research Institute, Bogor
13. Animal Diseases Research Institute, Bogor
14. Research Institute for Animal Virus Diseases, Surabaya

Directorate General of Estate Crops

15. Research Institute for Industrial Crops, Bogor

Ministry of Health

16. Nutrition Research Institute, Bogor and Djakarta

Indonesian Institute of Sciences

17. National Biological Institute, Bogor

Indonesian Atomic Energy Agency

18. Central Research Institute, Pasar Djum'at, Djakarta

Source: Mangundojo, 1971, p. 46.

Table 3.4. LIST OF RESEARCH INSTITUTES FOR ESTATE CROPS, IN SEPTEMBER 1970

No.	Name	Owned by	Financed by	Crops
1.	Research Institute for Estate Crops, Bogor		Cess	rubber, tea, coffee, quinine, tobacco, cocoa
2.	Research Institute of the Sumatra Planters Assoc., Medan		Cess	rubber, palm oil, tea, cocoa, food crops
3.	Agric. Div. of the Deli Tobacco Plantation, Medan	P.N.P. IX	P.N.P. IX	tobacco
4.	Sugar Experimental Station, Pasuruan	P.N.P. (sugar)	P.N.P. (sugar)	sugar
5.	Rubber Research Centre	P.N.P. (I-V)	P.N.P. (I-V)	rubber
6.	Marihat Research Centre	P.N.P. I, II, VI-VIII	P.N.P. I, II, VI-VIII	palm oil, tea, cocoa
7.	Tjibiruan Research Centre	P.N.P.(7)	P.N.P.(7)	tea, quinine
8.	Getas Rubber Research Centre	P.N.P.(7)	P.N.P.(7)	rubber
9.	Research Division XIX, Klaten	P.N.P. P.N.P.XIX	P.N.P.XIX	tobacco
10.	Research Division P.N.P.XXII, Djember	P.N.P.XXII	P.N.P.XXII	tobacco
11.	Academy for Estate Crops Min. Agric., Jogjakarta	(autonomous)	all P.N.P.	sugar

P.N.P. = Government Estate Enterprise
(7) = seven in number

Source: Mangundojo, 1971, p. 47.

Implementation of the Joint Team's recommendations proved difficult. A pilot project, the National Coordinated Rice Research Programme (NRRP) was set up in July 1970, to synchronise rice research activities throughout the country. In 1971, a contact between USAID and the International Rice Research Institute (IRRI) led to the stationing of 5 IRRI scientists at CRIS: a rice breeder, a legume breeder, a multiple cropping agronomist, a statistician-economist and a rice agronomist. Meanwhile a number of Indonesian scientists were sent overseas for training, including 15 for training to the Ph.D. level and 19 to the MS level. (USAID, 1977a). Despite this assistance, and additional support from the Ford Foundation, the Japanese government and other donors, a World Bank report concludes that the NRRP "was not functioning effectively even as of November 1974."¹¹ (World Bank, 1975, Annex 4, p. 3.)

3.4 The Agency for Agricultural Research and Development (AARD)

The formation of the Agency for Agricultural Research and Development (AARD) in 1974 represented the first step towards implementation of the Joint Team's proposal for a national body to provide overall guidance for the Government of Indonesia's agricultural research. Quantitative data on the status of agricultural research in Indonesia on the eve of AARD's formation is summarized in the World Bank's appraisal document for its Agricultural Research and Extension Project (Report No. 646a-IND, dated April 8, 1975).

Table 3.5 provides data on foreign donor staffing, budget and support for the major agricultural research organizations in Indonesia as of January 2, 1974. The total number of research scientists, trained to the Ph.D. or M.S. level, was 290, but it should be noted that not all of these were engaged in full-time research; the 100 scientists at IPB, for example, devote much of their time to teaching, and other personnel listed may have substantial

Table 3.5: INDONESIA: Staffing and Funding of Major Agricultural Research Organizations, January 2, 1974

	Professional Staff ^{1/}	Ph.D.'s & Masters	1973/74 Budget Rp (Million) ^{2/}	Foreign Donor	
				Lonor	US '000
A. Ministry of Agriculture					
<u>Directorate General of Agriculture</u>					
1. Central Research Institute of Agriculture (CRIA) - Bogor	86	3 and 54	677	USAID	133
2. Soils Institute - Bogor	26	---	132	FAO/UNDP	215
				USAID	133
				Netherlands	55
				Belgium	45
3. Horticulture Institute - Pasarminggu	18	---	191	USAID	133
				Netherlands	34
<u>Directorate General of Estate Crops</u>					
1. Estate Crops Institute - Bogor	31	3 and 28	245	---	---
2. Estate Crops Institute - Medan	28	1 and 27	453	IDA	600
				UNDP/FAO	933
3. Industrial Crops Institute - Bogor	37	0 and 4	277	---	---
4. Tea and Cinchona Institute - Bandung	N.A.	N.A.	N.A.	IDA	700
				Netherlands	1,000
<u>Directorate General of Livestock</u>					
1. Animal Husbandry Institute - Bogor	17	0 and 1	61	---	---
2. Animal Diseases Institute - Bogor	13	---	63	Australia	144
3. Animal Virus Diseases Institute-Surabaya	13	1 M.D. & 9 D.V.M.	81	Australia	374
				Belgium	36
<u>Directorate General of Forestry</u>					
1. Forestry - Bogor	24	---	94	---	---
2. Forestry Products - Bogor	21	---	123	---	---
<u>Directorate General of Fisheries</u>					
1. Inland Fisheries - Bogor	15	0 and 2	24	Netherlands	N.A.
				France	N.A.
				UNDP	N.A.
2. Fisheries Technology - Pasarminggu	7	---	14	Japan	150
3. Marine Fisheries - Jakarta	20	0 and 3	88	UNDP	N.A.
B. Government-Owned Plantations (PNP's) Research Centers					
1. Rubber Research Center - Tanjungmorawa	3	---	54	ADB	90
2. Oil Palm Research Center Marihat	8	---	96	Germany	N.A.
				ADB	N.A.
				IRHO	N.A.
3. Sugar Experiment Station - Pasuruan	19	---	412	IDA	1,000
C. University Agricultural Research					
1. Bogor Agricultural Institute (YPB)-Bogor	442	22 and 78	50	USAID/MUCIA	N.A.
2. Sumatera Utara University - Medan	51	---	N.A.	New Zealand	N.A.
				ADC	N.A.
3. Hasanuddin University					
a) Agriculture - Makassar	34	0 and 1	N.A.	---	---
b) Animal Husbandry - Makassar	32	---	N.A.	---	---
4. Gadjah Mada University					
a) Agriculture - Jogjakarta	55	---	36	USAID/MUCIA, RP ^{3/} & FF ^{4/}	N.A.
b) Animal Husbandry - Jogjakarta	--	---	3	USAID/MUCIA	N.A.
c) Animal Technology - Jogjakarta	19	0 and 2	19	USAID/MUCIA	N.A.
d) Forestry - Jogjakarta	27	---	3	USAID/MUCIA & RP ^{3/}	N.A.
D. Other Organizations					
1. LIPI - Jakarta	50	11 and 39	N.A.	---	---

1/ Group III and IV of the Indonesian Civil Service Salary Scale
2/ Includes both routine and development budgets
3/ U.S. Midwest Consortium of Universities and Rockefeller Foundation
4/ Ford Foundation

administrative duties. The Ministry of Agriculture's 1973/74 budget for research -- 2.52 billion Rupiahs (\$6.08 million) -- represented 20.5% of the Ministry's total budget in that year. In light of the frequent (and continuing) concern over low salaries of research workers, it is significant that researchers at the PNP centers received much higher compensation than those under the Ministry of Agriculture or at the universities (Table 3.6). Research funds from the government's **ordinary and development budgets** was supplemented by cess funds for rubber, palm oil, copra, kapok, tea, coffee, tobacco and quinine.^{3/}

The World Bank report identified 17 foreign donors who were providing financial support to 16 research organizations. Data were incomplete, but the Bank estimated total outside support from 1968-1974 at over \$20 million. ✓

The AARD, established by Presidential Decrees Nos. 44 and 45 in 1974, subsumed all Ministry of Agriculture research institutes with the exception of the Center for Animal Research and Development. (The latter receives substantial bilateral Australian assistance; it may be incorporated into AARD after this aid terminates in 1984. [World Bank, 1980]). The Head of AARD is on the same level as the five Director Generals (see Figure 3.2). AARD obtained jurisdiction over 24 research institutes, which operate a total of 99 experimental stations throughout the country, and **5 centers**.

^{3/} In addition to financing three agricultural research institutes, Cess Council resources are used for rural infrastructure and agricultural projects.

Table 3.6: Ministry of Agriculture Research Budgets and Salaries

Annual Budget of Research Units
(Millions of Rupiahs per Professional Staff Member)

<u>Research Organization</u>	<u>Per Professional Member</u> <u>Rupiahs (million) 1/</u>
<u>Directorate General of Agriculture</u>	
CRIA	7.9
Soils	5.1
Horticulture	10.6
<u>Directorate General of Estate Crops</u>	
Estate Crops - Bogor	7.6
Estate Crops - Medan	16.2
Industrial Crops - Bogor	7.5
Tea & Cinchona - Bandung	(n.a.)
<u>Directorate General of Livestock</u>	
Animal Husbandry	3.6
Veterinary	4.8
Animal Viral Diseases	6.2
<u>Directorate General of Forestry</u>	
Forestry	3.9
Forestry Products	5.9
<u>Directorate General of Fisheries</u>	
Inland Fisheries	1.6
Fisheries Technology	2.0
Marine Fisheries	4.4
<u>Government-Owned Plantation PNP's Research Centers</u>	
Rubber Research Center - T. Morawa	18.0
Cil Palm Research Center - Marihat	12.0
Sugar Experiment Station - Pasaruan	21.7
<u>Universities 2/</u>	
Bogor Faculty (IPB)	0.10
Gadjah Mada - Agriculture Faculty	0.65
Gadjah Mada - Forestry Faculty	0.11
Gadjah Mada - Agricultural Technology Faculty	1.00

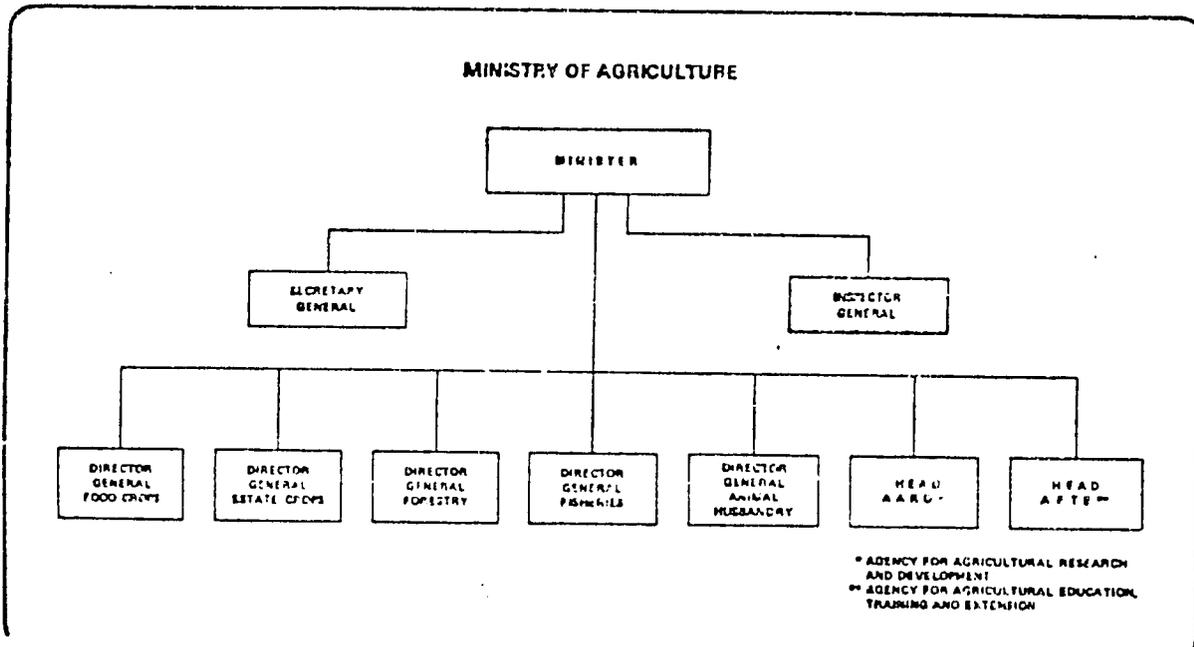
1/ FY 1973/74 includes both routine and development budgets.

2/ FY 1973/74.

March 27, 1975

Source: World Bank, 1975b, Annex 4, Table 3.

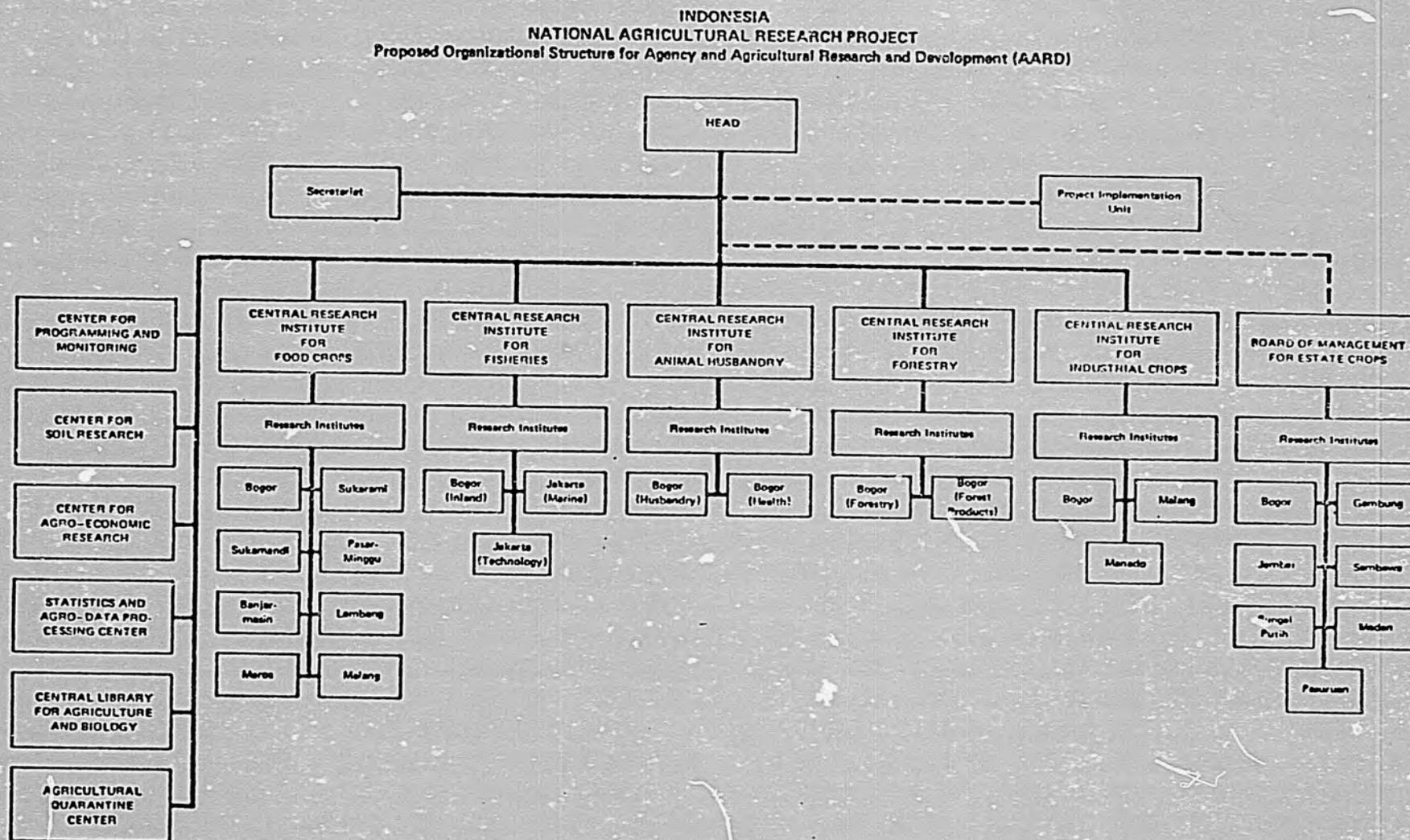
Figure 3.2: Organization chart, Ministry of Agriculture, 1978



Source: AARD, 1978.

AARD has only gradually assumed control of the institutes and centers which are nominally under it. The organization did not become operational with its own budget until 1976. As recently as April 1980, a World Bank appraisal document noted that "the individual institutes/centers still retain considerable autonomy." (World Bank, 1980, p. 8). By 1979 the number of institutes reporting directly to the Head of AARD had grown to 29, due to upgrading of regional brackets into full institutes. A reorganization, under Presidential Decree No. 47 of September 29, 1979, established five Central Research Institutes and one new research center (Programming and Monitoring). (See Figure 3.3). Only the directors of these Central Research Institutes, plus the directors of the research centers now report directly to the AARD Head. The research institutes for estate crops retain greater autonomy, but they report to a Board of

Figure 3.3: AARD Organization Structure, 1979



World Bank - 20789

Management chaired by the AARD Head. (World Bank, 1980). AARD's Project Implementation Unit, formed in 1975, is responsible for the preparation of foreign aid programs. The locations of the major AARD research institutes, and their responsibilities for various commodities, are indicated in Table 3.7.

Data on the staffing and budget of the AARD research organizations is presented in Tables 3.8 thru 3.11. Table 3.8 provides a breakdown of research staff by degree and institute as of July 1979; Table 3.9 provides a breakdown by institute and discipline. Table 3.10 summarizes AARD's budget since its inception, while Table 3.11 shows the allocation of AARD financial resources among the various institutes and centers in 1979/80.

In financial terms, AARD accounts for approximately 80% of the agricultural research activity in Indonesia. AARD Head S.W. Sadikin (1977) reports that in FY1977/78 AARD's budget was Rp. 14.3 billion, while the research budget of the public estates was Rp. 2.5 billion and that of the universities, colleges and other government agencies was less than Rp. 1 billion. ✓

External assistance to Indonesian agricultural research from 1968-77 totaled approximately \$35 million, according to Sadikin (1977); the World Bank (1980) puts the 1970-79 total somewhat lower, at \$25 million. Different donors have tended to support research in different commodities, as indicated in Table 3.12. AARD total expenditures during the five-year period 1979/80 - 1983/84 are projected at Rp 140 billion (\$225 million), excluding bilateral assistance. (World Bank, 1980).

Table 3.7: AARD RESEARCH INSTITUTES, THEIR LOCATION AND MAJOR PROGRAMS

Central Research Institute/Research institute	Major commodities researched
<u>A. Food Crops Central Research Institute</u>	
FCRI /a Sukarani, Sumatera	Rice, palawija, vegetables
FCRI Bogor, W. Java	Rice, palawija
FCRI Lembang, W. Java	Vegetables
FCRI Sukamandi, W. Java	Rice, palawija
FCRI Malang, E. Java	Palawija, rice, fruits, vegetables
FCRI Banjarmasin, S. Kalimantan	Rice
FCRI Maros, S. Sulawesi	Rice, palawija, vegetables
<u>B. Estate Crops Research Institute (under Board of Management)</u>	
ECRI /b Bogor, W. Java	Rubber, rubber technology
ECRI Medan, N. Sumatera	Oil palm
ECRI Jember, E. Java	Coffee, cocoa
Rubber Research Institute, Sungai Putih, N. Sumatera	Rubber
Rubber Research Institute, Sembawa, S. Sumatera	Rubber
Tea Research Institute, Gambung, W. Java	Tea and chinchona
<u>C. Industrial Crops Central Research Institute</u>	
ICRI /c Malang, E. Java	Tobacco, fiber crops
ICRI Bogor, W. Java	Coconuts
ICRI Mapanget, N. Sulawesi (Manado)	Coconuts, cloves
ICRI Tanjungkarang, Lampung	Pepper, cloves
<u>D. Animal Husbandry Central Research Institute</u>	
Animal Husbandry Research Institute, Bogor, W. Java	Animal Husbandry
Animal Health Research Institute, Bogor, W. Java	Animal Health
<u>E. Forestry Central Research Institute</u>	
Forest Research Institute, Bogor, W. Java	Forest
Forest Products Research Institute, Bogor, W. Java	Forest Products
<u>F. Fisheries Central Research Institute</u>	
Fish Technology Research Institute, Jakarta	Fish Technology
Marine Fisheries Research Institute, Jakarta	Marine Fisheries
Inland Fisheries Research Institute, Bogor	Inland Fisheries

/a FCRI - Food Crops Research Institute.

/b ECRI - Estate Crops Research Institute.

/c ICRI - Industrial Crops Research Institute.

Table 3.8: Permanent Research Staff of AARD
(July 1979)

Research institute, center or office	PhD	MS	Ir/Drh Drs/Dra	BS	Res. Asst.	Total
<u>AARD Headquarters/Secretariat</u>	-	1	14	5	37	57
<u>Food Crops</u>						
Central Research Institute for Agriculture	9	8	147	65	286	515
Horticulture Research Institute	2	3	61	41	140	247
Subtotal	<u>11</u>	<u>11</u>	<u>208</u>	<u>106</u>	<u>426</u>	<u>762</u>
<u>Estate Crops</u>						
Estate Crop Research Institute (Bogor)	3	3	38	21	87	152
Estate Crop Research Institute (Medan)	1	-	36	8	92	137
Tea and Chincona Research Institute	1	1	14	8	66	90
Subtotal	<u>5</u>	<u>4</u>	<u>88</u>	<u>37</u>	<u>245</u>	<u>379</u>
<u>Industrial Crops</u>						
Industrial Crop Research Institute	-	7	40	32	143	222
<u>Animal Health/Husbandry</u>						
Animal Health Research Institute	1	-	26	4	39	70
Animal Husbandry Research Institute	1	3	40	5	42	91
Subtotal	<u>2</u>	<u>3</u>	<u>66</u>	<u>9</u>	<u>81</u>	<u>161</u>
<u>Forestry and Forest Products</u>						
Forest Product Research Institute	-	4	38	19	57	108
Forest Research Institute	2	2	27	10	27	68
Subtotal	<u>2</u>	<u>6</u>	<u>65</u>	<u>29</u>	<u>74</u>	<u>176</u>
<u>Fisheries</u>						
Fishery Technology Research Institute	-	-	13	9	15	37
Inland Fishery Research Institute	-	3	29	10	51	93
Marine Fishery Research Institute	1	2	23	7	28	61
Subtotal	<u>1</u>	<u>5</u>	<u>65</u>	<u>26</u>	<u>94</u>	<u>191</u>
<u>Support Centers</u>						
Agricultural Quarantine Center	-	-	8	19	140	167
Agro-Economic Research Center	2	-	16	10	-	28
Central Library	1	-	4	16	35	56
Statistics and Agro-Data Center	1	-	30	3	4	38
Soil Research Center	2	7	22	16	60	107
Subtotal	<u>6</u>	<u>7</u>	<u>80</u>	<u>64</u>	<u>239</u>	<u>396</u>
<u>Total</u>	<u>27</u>	<u>44</u>	<u>626</u>	<u>308</u>	<u>1,339</u>	<u>2,344</u>

Source: World Bank, 1980, p. 32.

Table 3.9: Distribution of Scientists in AARD by Discipline and Research Institute
(July, 1979)

Discipline	Food Crops		Estate Crops			Industrial crops	Animal Health/ Husbandry		Forestry/Forest Products		Fisheries			SRC	TOTAL
	CRIA	HRI	ECRI (Bogor)	ECRI (Medan)	TCRI	ICRI	ADRI	AHRI	FPRI	FRI	FTRI	IFRI	MFRI		
Agronomist	111	34	14	13	8	93	-	-	-	-	-	-	-	4	277
Biologist	10	3	-	-	-	-	2	-	17	10	-	4	24	7	77
Breeder	31	26	12	8	3	19	-	15	-	-	-	-	-	-	115
Entomologist	27	6	4	7	2	4	-	-	-	-	-	-	2	-	52
Pathologist	11	9	7	5	2	5	8	-	-	-	-	3	1	-	51
Physiologist	13	2	3	3	2	-	-	-	-	-	-	-	-	-	25
Soil Scientist	7	-	11	8	3	-	-	-	-	-	-	-	-	51	82
Microbiologist	-	1	2	-	-	-	-	-	-	-	3	-	-	3	9
Bacteriologist	-	-	-	-	-	-	4	-	-	-	-	-	-	-	4
Technologist	8	29	23	14	1	11	-	7	19	-	15	-	-	-	127
Agro-Economist	14	7	4	5	-	18	-	9	-	-	3	2	3	-	65
Climatologist	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Weed Scientist	-	-	4	2	-	-	-	-	-	-	-	-	-	-	6
Agricultural Engineer	3	-	-	-	-	8	-	-	-	-	-	-	-	-	11
Biometrician/Statistician	4	1	-	3	-	3	-	-	-	-	1	-	1	3	16
Chemist	4	-	1	1	11	-	-	-	-	-	1	1	-	4	27
Biochemist	-	-	-	2	-	-	-	-	-	-	-	-	-	-	4
Forest Utilization Specialist	-	-	-	-	-	-	-	-	20	-	-	-	-	-	20
Forest Management Specialist	-	-	-	-	-	-	-	-	19	-	-	-	-	-	19
Animal Production Specialist	-	-	-	-	-	-	-	10	-	-	-	-	-	-	10
Nutritionist	-	-	-	-	-	-	-	16	-	-	-	2	-	-	18
Veterinary Surgeon	-	-	-	-	-	-	4	-	-	-	-	-	-	-	4
Mycologist	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2
Parasitologist	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silviculture	-	-	-	-	-	-	-	-	-	21	-	-	-	-	21
Forest Influence	-	-	-	-	-	-	-	-	-	14	-	-	-	-	14
Forest Protection	-	-	-	-	-	-	-	-	-	10	-	-	-	-	10
Forest Mensuration & Evaluation	-	-	-	-	-	-	-	-	-	9	-	-	-	-	9
Sericulture	-	-	-	-	-	-	-	-	-	14	-	-	-	-	14
Fisheries Management Specialist	-	-	-	-	-	-	-	-	-	-	-	12	15	-	27
Oceanographer	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
Quality Control & Development	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4
Forest Engineering	-	-	-	-	-	-	-	-	14	-	-	-	-	-	14
Forest Exploitation	-	-	-	-	-	-	-	-	9	-	-	-	-	-	9
Total	244	118	85	71	32	161	20	57	98	78	27	31	49	80	1,151

Key to acronyms:

CRIA - Central Research Institute for Agriculture
HRI - Horticultural Research Institute
ECRI - Estate Crops Research Institute
TCRI - Tea and Chinchona Research Institute
ICRI - Industrial Crops Research Institute
ADRI - Animal Diseases Research Institute
AHRI - Animal Health Research Institute
FPRI - Forest Products Research Institute
FRI - Forest Research Institute
FTRI - Fisheries Technology Research Institute
IFRI - Inland Fisheries Research Institute
MFRI - Marine Fisheries Research Institute
SRC - Soils Research Center

Table 3.10: Summary of AARD Budget - 1974/75 to 1979/80 /a

Year	Routine budget ----- (Rp million)	Development budget (Rp million)	Total -----	Routine budget -- (Rp million, 1979 prices)	Development budget (Rp million, 1979 prices)	Total --
1974/75 /b	-	1,935	1,935	-	3,721	3,721
1975/76	1,664	5,919	7,583	2,869	10,205	13,074
1976/77	1,999	8,904	10,903	3,029	13,491	16,520
1977/78	2,664	9,992	12,656	3,600	13,503	17,103
1978/79	3,274	10,985	14,259	4,042	13,562	17,604
1979/80	3,644	13,015	16,659	3,644	13,015	16,659

/a Indonesian fiscal year - April 1 to March 30.

/b Part of year only.

Source: World Bank, 1980, p. 36.

Table 3.11: Budget for AARD - 1979/70
(Rp million)

<u>Budget for AARD - 1979/80</u> (Rp million)			
Research institute, center or office	Development budget	Routine budget	Total budget
AARD Headquarters	1,273	321	1,594
<u>Food Crops</u>			
Central Research Institute for Agriculture	2,571	783	3,354
Horticulture Research Institute	436	386	822
Subtotal	<u>3,007</u>	<u>1,169</u>	<u>4,176</u>
<u>Estate Crops</u>			
Estate Crop Research Institute (Bogor)	701	-	701
Estate Crop Research Institute (Jember)	245	-	245
Tea and Chincona Research Institute (Gambung)	780	-	780
Estate Crop Research Institute (Sembawa)	178	-	178
Estate Crop Research Institute (Medan)	727	-	727
Subtotal	<u>2,631</u>	-	<u>2,631</u>
<u>Industrial Crops</u>			
Industrial Crop Research Institute	855	522	1,377
<u>Animal Health/Husbandry</u>			
Animal Husbandry Research Institute	353	175	528
Animal Health	451	155	606
Center for Animal Research and Development	500	-	500
Subtotal	<u>1,304</u>	<u>330</u>	<u>1,634</u>
<u>Forestry and Forest Products</u>			
Forest Research Institute	326	168	494
Forest Product Research Institute	403	179	582
Subtotal	<u>729</u>	<u>347</u>	<u>1,076</u>
<u>Fisheries</u>			
Inland Fishery Institute	453	150	613
Marine Fishery Institute	527	132	659
Fishery Technology Institute	171	56	227
Subtotal	<u>1,161</u>	<u>338</u>	<u>1,499</u>
<u>Support Centers</u>			
Agricultural Quarantine Center	125	341	466
Agro-Economic Research Center	92	-	92
Central Library	230	129	359
Statistics and Agro-Data Center	327	-	327
Planning Activities	32	-	32
Resources Conservation	75	-	75
Soil Research Center	504	146	650
Transmigration Research	670	-	670
Subtotal	<u>2,055</u>	<u>616</u>	<u>2,671</u>
<u>Total</u>	<u>13,015</u>	<u>3,643</u>	<u>16,658</u>

Source: World Bank, 1980, p. 37.

Table 3.12: Commodity Research Assisted by Bilateral Foreign Donors

<u>Commodity</u>	<u>Donors</u>
Rice	✓ USAID, Japan, Netherlands
Rubber	Germany
Oil Palm	Germany
Coconut	FAO/UNDP
Clove	U.K.
Animal husbandry & diseases	Australia, Belgium
Grain handling & storage	Australia
Fisheries	U.K., Canada, Germany, Japan
Tea	Netherlands
Plant production & horticulture	Netherlands

Source: World Bank, 1980, p. 17.

3.5 USAID assistance to agricultural research since 1970

Since 1970, USAID has undertaken several major projects involving agricultural research and agricultural education in Indonesia. These are listed in Table 3.13. A major (\$22 million) new Applied Agricultural

TABLE 3.13: U.S. ASSISTANCE TO AGRICULTURAL RESEARCH AND EDUCATION IN INDONESIA, 1970-PRESENT

<u>Project No.</u>	<u>Title</u>	<u>Years</u>	<u>Obligation (\$ thous.)</u>
497-0190	Ag. Higher Education	1970-76	7,390
-0198	Ag. Research	1973-80	2,273
-0260	Ag. Educ. for Development	1976-81	5,500
-0263	Sumatra Ag. Research	1977-85	9,500
-0270	Grad. Ag. School-Title XII	1979-84	6,000
-0293	Eastern Islands Ag. Educ.-Title XII	1979-84	6,000

Source: PAISHIST data bank, USAID

Research Project is also under consideration. In addition, other agricultural projects often contain research components. For example, Project No. 497-189, "Assistance Agriculture" includes assistance to the Soils Research Institute for implementation of the Benchmark Soils Project in cooperation with the University of Hawaii (USAID, 1977b).

The agricultural Research Project (497-0198) supports IRRI scientists at CRIA and overseas training of CRIA personnel, in conjunction with the NRRP, as described above. Although the major emphasis is on rice, research under the project also involves secondary (palawija) crops, including grain legumes, corn, sorghum and cassava, grown in cropping systems where rice predominates. The 1979 Project Evaluation Summary redefines the project's purpose as "a concerted effort to sustain and expand the research capability of food crop production of the Central Research Institute of

Agriculture." (USAID, 1979b, p. 6.)

The Sumatra Agricultural Research Project (497-0263) responds to the need, recognized in the 1969 Joint Team report, for greater attention to regional research. It includes the construction of research facilities at a headquarters station and 8 substations and training including 8 Ph.D.'s and 64 M.Sc.'s. The stations will be under CRIA, and fit in with a long-term CRIA plan, developed in 1969-71, for the establishment of regional research centers. The first of these was established in South Sulawesi in 1971 with support from the Netherlands government. (USAID, 1977c.)

The proposed Applied Agricultural Research Project will similarly strengthen research institutions in Kalimantan, Sulawesi, Maluku and West Java. In general, USAID is funding short-term training while the World Bank is to fund long-term graduate training under its National Agricultural Research II Project (MASI, 1980).

In January 1968, an Agricultural Education Survey Team reaffirmed USAID's interest in assisting agricultural education in Indonesia. A number of new agricultural colleges were established in the 1960s. (see Table 3.14).

TABLE 3.14

LIST OF FACULTIES OF AGRICULTURAL SCIENCES (MINISTRY OF EDUCATION)
LOCATION AND YEAR OF ESTABLISHMENT

	Agric.	V.M.	An.H.	Forest	Fish	Techn.M.
1. Gadjah Mada, Jogjakarta	1946	1946	1969	1963	—	1963
2. I.P.B. Bogor	1941	1948	1963	1963	1963	1964
3. Sijiah Kuala, Banda Aceh	1962	—1961††—	—	—	—	—
4. Sumatra Utara, Medan	1957	—	—	—	—	—
5. Andalas, Padang	1956	—	1963	—	—	—
6. Riau, Pekanbaru	—	—	—	—	1965	—
7. Telanaipura, Djambi	1963	—	1963	—	—	—
8. Sriwidjaja, Palembang	1962	—	—	—	—	—
9. Padjadjaran, Bandung	1957	—	1963	—	—	—
10. Djen. Sudirman, Purwokerto	1963	—	1963	—	—	—
11. Diponegoro, Semarang	—	—	1963	—	—	—
12. Brawidjaja, Malang	1961	—1963††—	—	1965 (majoring)	1963 (majoring: marine-fishery)	—
13. Djember, Djember	1965	—	—	—	—	—
14. Udayana, Bali	1965	—	1962	—	—	—
15. Hasanuddin, Makasar	1962	—	1963	—	—	—
16. Sam Ratulangi, Manado	1961	—	1962	—	1965	—
17. Lambung Mangkurat, Banjar Baru	1961	—	—	1964	1964	—
18. Dwikora, Pontianak	1963	—	—	—	—	—
19. Mulawarman, Samarinda	1962	—	—	1962 (majoring)	—	—
20. Pattimura, Ambon	1963	—	1963	—	—	—
21. Tjenderawasih, Manokwari	1963	—	1962	1962	—	—
22. Nusa Tenggara, Kupang	1962	—	1962	—	—	—
23. Kalimantan Tengah, Palangka Raya	1965	—	—	1965	—	—
24. Nusa Tenggara, Lombok	1963	—	1967	—	—	—
	22	2	2	14	7	5
						2

†† vet. med. & an. lush.
Agric. = Agriculture
V.M. = Vet. medicine
An.H. = Animal Husbandry
Forest = Forestry
Fish. = Fishery
Techn.M. = Agricultural Technology and Mechanisation.

Source: Mangundojo, 1971, p. 48.

The new colleges carry out little research, however, and "tend to be isolated from recent agricultural developments." (USAID, 1976a.) IPB's research budget (1976:\$500,000) greatly exceeds that of all other agricultural faculties combined. IPB and GMY have been designated as Penimba or "leader faculties," and are supposed to help improve the other faculties

through staff exchanges, summer courses, program evaluations, etc.

USAID's Agricultural Higher Education Project (497-0190) provided two full-time educational advisers to GMY and one to IPB, and brought a large number of U.S. scientists to both institutions on a short-term basis. The project also financed overseas training for Indonesian faculty members. The contractor for this project has been the Midwest Universities Consortium for International Activities (MUCIA), originally composed of the Universities of Illinois, Indiana, Michigan State and Wisconsin. (Ohio State and Purdue were added in 1975.) USAID's Agriculture Education for Development Project (No. 497-0260) represents "Phase II" of the MUCIA project, broadened to include six provincial universities. The total number of Ph.D.'s and M. Sc.'s to be funded by these projects, and from other sources, is indicated in Table 3.15. Only one university

TABLE 3.15
Agriculture Education for Development
GOI/USAID/MUCIA

<u>Institution</u>	<u>Actual Phase I</u> (1970-1976)		<u>Projected Phase II</u> (1977-1981)		<u>Total</u>		<u>In-Country</u>
	M.Sc.	Ph.D.	M.Sc.	Ph.D.	M.Sc.	Ph.D.	Ph.D.
IPB	15	20	6	40	21	60	13
UGM	21	4	4	25	25	29	11
Six Provincial Universities	<u>3</u>	<u>3</u>	<u>4</u>	<u>20</u>	<u>7</u>	<u>23</u>	<u>30</u>
	39	27	14	65	53	112	54

GOI/Other Donors (Estimated)

	<u>1972-1976</u>		<u>1977-1981</u>		<u>Total</u>	
IPB	1	3	6	3	7	6
UGM	17	3	18	0	35	9
Six Provincial Universities	<u>10</u>	<u>12</u>	<u>3</u>	<u>6</u>	<u>15</u>	<u>18</u>
	28	18	27	15	57	33

Source: USAID, 1978(?), Feasibility Study, p. 56.

in eastern Indonesia (the University of Hasanuddin in South Sulawesi) is included; USAID's new Eastern Islands Agricultural Education Project (No. 497-0293) is intended to strengthen all six universities in the region. Similarly, a \$9 million Sumatra Agricultural Universities Projects loan has been proposed to upgrade the Sumatran universities with U.S. collaboration.⁴ In addition to the above projects, USAID has regional and inter-country projects (such as the Benchmark Soils, mentioned above) which involve agricultural research-related activities in Indonesia. Two such projects are the Auburn University aquaculture project, which has included research at two project sites in northern Sumatra, and the Extension of Small Scale Agricultural Equipment (IRRI) Project (No. 498-0265) which has a research component.

3.6 Multilateral assistance

The World Bank has supported agricultural research in Indonesia since the formation of AARD, via two loans: 1) the Agricultural Research and Extensions Project (Loan 1179-IND), also known as National Agricultural Research I (NAR I); and 2) the new National Agricultural Research (NAR II) Project. The Bank also played a major role in the design of AARD's organizational and administrative structure (World Bank, 1975b).

NAR I, a \$47 million project with a Bank loan of \$21.5 million, was

⁴Data on staff development and funding of Indonesia's agricultural universities is apparently available in a GoI publication entitled Annual Review of Higher Agricultural Education. Only the 1973 edition can be found at AID's Reference Center in Washington.

approved in December 1975. The project is restricted to four principal commodity groups: rice, secondary food crops, highland vegetables and rubber. Four new research centers--two for rubber, at Sungai Putih (North Sumatra) and Sembawa; one for rice and secondary crops at Sukamandi (West Java); and one for highland vegetables at Margahaya (near Lembang in West Java)--are being developed under the project. The project also includes the construction of one national and nine regional agricultural information centers.

The Sukamandi center, established under the World Bank's Seeds Project (Credit 246-IND) was "originally intended to become the national center for rice and palawija crop research." (World Bank, 1980, p. 12.) The rationale for shifting the center for such research from Bogor was related to the different environmental conditions at each site. Bogor is in the mountains, while Sukamandi, in the flatlands, is more representative of the irrigated plains which are Java's rice bowls. The relocation proved however to be highly problematic. An audit report on the Seeds Project (World Bank, 1979b) notes that owing to lack of housing, other facilities and social amenities at this "remote" location, professional staff have been less than enthusiastic about living there. The Sukamandi station is now viewed as a regional sub-station, on a par with the CRIA sub-stations at Sukarami (West Sumatra), Banjarmasin (South Kalimantan), Malang (East Java) and Maros (South Sulawesi).

NAR II, appraised in 1980, is a \$101.5 million project, to which the World Bank will provide \$65 million (\$35 million IBRD loan and \$30 million IDA credit). It is targeted to commodity groups not included

in NAR I: fruits, lowland vegetables, livestock, fisheries, forestry, estate crops other than rubber, and industrial crops. Project expenditure is to be distributed as follows:

industrial crops	24%
fisheries	21%
food crops	18%
estate crops	13%
livestock	10%
forestry	5%
soils research	2%
library	1%
other training	6%

(Source: World Bank, 1980, p. 20.)

The World Bank has also assisted agricultural education in Indonesia, through credits in 1972 and 1979. These have been directed to the training of middle-level manpower.

The Asian Development Bank does not appear to have funded agricultural research projects in Indonesia. In 1979, however, the ADB approved a \$25 million loan to upgrade the University of Hasanuddin in South Sulawesi, which has been designated as the "growth center university" for the eastern region. Agricultural Sciences is one of the three faculties included in the project (ADB, 1979). An ADB technical assistance project is also preparing a project at the University of North Sumatra in Medan (ADB, 1978).

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CHAPTER 4. AGRICULTURAL RESEARCH IN THE PHILIPPINES

4.1 Overview of agricultural research to 1971

In 1909, eleven years after the U.S. "won" the Philippines from Spain, the University of the Philippines College of Agriculture was founded at Los Banos by Dr. Edward Copeland, an American botanist. For years the College was run by American faculty; responsibility was gradually shifted to Filipinos. Cornell University was "the dominant influence almost from the beginning of Los Banos." (Johnson, 1973, p.3). President Schurman of Cornell headed the first Philippine Commission, which established a civil government under U.S. tutelage in the Philippines. The College was destroyed during World War II but subsequently restored with U.S. support (see Section 4.2, below). In the post-war period the College was the leading center for agricultural research in the Philippines; by 1960 "nearly 85% of the basic and applied research in tropical agriculture in the Philippines was credited to Los Banos." (Johnson, 1973, p. 8).

There was a proliferation of lesser research institutions, however, under various government agencies and some under private firms, particularly in the plantation sector. A list of agencies conducting agricultural research in the Philippines, as of 1971, is provided in Table 4.1.

The U.S. played an important role in the development of many of these institutions. Throughout the period of U.S. control, the United States Department of Agriculture (USDA) was closely involved with Filipino agriculture. After the war, the U.S. helped to rebuild not only the Los Banos campus but also other agricultural schools including Central Luzon State University. Beginning in 1951, the Agriculture Division of the Mutual Security Agency (MSA) financed rice and corn breeding research projects under the Bureau of Plant Industry (BPI) of the Department of Agriculture and Natural

TABLE 4.1

**LIST OF AGENCIES CONDUCTING AGRICULTURAL RESEARCH
IN THE PHILIPPINES**

I Department of Agriculture and Natural Resources (DANR)

1. Bureau of Agricultural Economics (BAEcon)
2. Bureau of Animal Industry (BAI)
3. Bureau of Forestry (BF)
4. Bureau of Plant Industry (BPI)
5. Bureau of Soils (BS)
6. Philippine Fisheries Commission (PFC)
7. Philippine Sugar Institute (Philsugin)
8. Philippine Tobacco Administration (PTA)
9. Reforestation Administration (RA)
10. Parks and Wildlife Office (PWO)
11. Abaca and Other Fibres Development Board (AFDB)
12. National Food and Agriculture Council (NFAC)*

II National Science Development Board (NSDB)

1. National Institute of Science and Technology (NIST)
 - a. Food and Nutrition Research Council (FNRC)
 - b. Agricultural Research Centre (ARC)
2. Philippine Atomic Energy Commission (PAEC)
3. Philippine Coconut Research Institute (Philcorin)
4. Forest Products Research and Industry Development Commission (Forpridecom)

III Office of the President

1. National Irrigation Administration (NIA)
2. Agricultural Productivity Commission (APC)**

IV Other offices

1. National Economic Council of the Philippines (NEC)
2. National Research Council of the Philippines (NRCP)***
3. The International Rice Research Institute (IRRI), private

V Colleges and Universities

1. Araneta University, private
2. Central Luzon State University
3. Central Mindanao University
4. Central Philippine University, private
5. Mindanao Institute of Technology
6. Mindanao State University
7. Silliman University, private
8. University of the Philippines
 - a. College of Agriculture
 - b. College of Fisheries
 - c. College of Veterinary Medicine
10. Xavier University

VI Commercial Firms

1. Dole Philippines (Dole subsidiary)
2. Philippine Packing Corporation (Del Monte subsidiary)
3. Stanfilco (Standard Fruit Company subsidiary)
4. Hijo Banana Plantation
5. Menzi Company (Rubber & Coconuts)
6. Yulo & Sons (Sugar cane & livestock)
7. Victorias Milling (Sugar cane)
8. Blue Bar Coconut (Vegetable oils)
9. Philippine Refining Company (Vegetable oils)
10. Ansa Farm (Livestock)
11. ESFAC (Fertilisers and chemicals)
12. Shell Philippines
13. Dow Philippines
14. Cyanamid Philippines

* A coordinating office for action programmes in food production. It administers funds for research which supports the action programmes.

** An extension service agency.

*** A planning body which administers funds for basic research.

Source: Lantican, 1971, pp. 87-88

Resources (DANR). The MSA also financed the establishment of the Philippines' first coconut experiment station (MSA, 1953).

The National Science Development Board (NSDB) was established in 1958 to coordinate all scientific research in the Philippines. The Board's lack of administrative authority prevented it from playing a strong coordinating role, however, and its function became mainly one of providing grants-in-aid (Lantican, 1971).

In 1966, total expenditures for agricultural research in the Philippines amounted to \$5.6 million (Lantican, 1971). Fragmentation and lack of coordination, however, limited the effectiveness of the research system. Reviewing the Philippines' agricultural growth record from 1902-1965, Hooley and Ruttan (1968) noted "the stagnant character of Philippine agricultural yields." (p. 88). The principal exception was sugarcane, yields of which rose by 50% between 1930 and 1965. This increase was attributed to technological change, resulting partly from new inputs and partly from varietal and other improvements stemming from research. Noting the sugarcane experience, the authors recommended "substantial investment in research and development." (p. 91).

The establishment of the International Rice Research Institute (IRRI) at Los Banos in 1960, with support from the Ford and Rockefeller Foundations, brought the Philippines a major new agricultural research facility. To some extent, however, IRRI acted as a magnet for research manpower and resources in the Philippines. The desire to strengthen non-rice research, as well as to overcome the great fragmentation of the country's agricultural research system, contributed to the formation of the Philippine Council for Agricultural Research (PCAR) in 1972 (see Section 4.3, below).

The status of agricultural research on the eve of PCAR's formation is well

documented in the 1971 report of National Agricultural Research System Survey (NARSS) Technical Panel. The survey reported a total research manpower of 1875; adjusting for time devoted to non-research activities, the scientist man-years (SMY's) in agricultural research in FY1970-71 were estimated at 879.5 (see Tables 4.2 and 4.3).

Table 4.2: Distribution of research manpower by agency, FY 1970-71.

Group	Manpower	
	Number	%
Commodity institutes	101	5.3
DANR	542	29.0
NSDB	279	14.8
Private sector	151	8.3
Universities and colleges	802	42.6
TOTAL	1875	100.0

Source: NARSS, 1971, p. 20.

Table 4.3: Full time manpower equivalent devoted to research by agency, FY 1970-71.

Group	Scientist-man-years		% Total time devoted to research
	Number	%	
Commodity institutes	74.3	38.5	73.5
DANR	344.0	39.0	63.8
NSDB	220.2	25.0	79.5
Private sector	63.1	7.0	47.8
Universities & colleges	177.9	20.5	22.8
TOTAL	879.5	100.0	

Source: NARSS, 1971, p. 21.

The level of training of the researchers is shown in Table 4.4; 19% of the SMY's in research were trained to the M.S. or Ph.D. level. Table 4.5 shows the areas of specialization of this research manpower.

Table 4.4: Level of training of agricultural research manpower and percent total time devoted to agricultural research, FY1970-71.

Agency	Ph.D.			M.S.			B.S. ¹			TOTAL			Percent total time devoted to research ²
	No.	No.	%	No.	Total	SMY	No.	Total	SMY	No.	Total	SMY	
Commodity institute	3	—	—	4	3.9	2.51	97	96.1	71.8	101	100	74.3	73.5
DANR	9	3	0.6	2.4	61	9.4	188	90.0	314.9	542	100	344.0	63.8
NSDB	6	11	3.9	6.2	39	14.4	229	82.2	183.6	279	100	220.0	79.5
Private sector	13	24	15.9	20.4	14	9.1	113	75.0	36.9	151	100	63.1	47.8
Universities and colleges	22	143	17.8	30.6	292	36.4	367	45.8	102.5	802	100	177.9	22.8
TOTAL	53	181	—	58.6	400	—	1294	—	709.7	1875	—	879.5	—

THE PHILIPPINE AGRICULTURAL RESEARCH SYSTEM

¹ Includes all baccalaureate degree holders undertaking research in agriculture, fishery, forestry, and related sciences.

² Percent total time devoted to research = $\frac{\text{Scientist-man-year}}{\text{Total manpower}} \times 100$

Source: NARSS, 1971, p. 22.

Table 4.5: Areas of specialization and level of training of agricultural research manpower, FY 1970-71.

Specialization	Ph.D.		M.S.		B.S. ¹		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Animal sciences	22	12.2	44	12.2	27	9.3	193	10.4
Crop sciences	72	39.9	124	28.6	356	27.4	552	29.4
Fishery & oceanic sciences	4	2.1	14	2.8	53	4.1	71	3.7
Forestry sciences	11	6.1	23	5.5	172	13.2	206	11.1
Food & nutrition sciences	6	3.3	51	13.9	33	3.5	90	4.8
Physical & chemical sciences	16	8.8	50	13.4	301	23.1	367	19.5
Soils & water sciences	14	7.7	26	6.4	132	10.2	172	9.2
Social sciences	30	19.9	68	17.2	120	9.2	224	11.9
TOTAL	181	100.0	400	100.0	1294	100.0	1875	100.0

¹ Includes baccalaureate degree holders undertaking research in agriculture, fishery, forestry, and related sciences.

Source: NARSS, 1971, p. 24.

Research expenditures in FY1970-71 totaled 64 million Pesos (\$10 million). The breakdown of expenditures, by agency and item, appears in Table 4.6. The sources of funds were government appropriations, commodity levies (on sugar, tobacco, coconut products, forest products and fish), the government's Special Science Fund, foreign aid, and the private sector. Sources of foreign assistance are enumerated in Table 4.7.

As a rough indication of the commodity orientation of agricultural research from 1967-1971, Tables 4.8 through 4.11 show the number of projects for each crop and problem area.

4.2 The Cornell-Los Banos program

During World War II, the University of the Philippines College of Agriculture (UPCoA) at Los Banos was virtually destroyed. The situation in 1952 was described as follows:

The campus was fire and bomb-eaten wasteland, with little in the way of laboratory equipment, seed stocks, tools, animals, books or records. There was a staff of sixty, but many were little more than apprentices serving under a small body of senior faculty. Financial support from the government was meager. It had been a tradition to treat the College of Agriculture as a poor relative, while the more substantial support was provided the main campus at Diliman (in metropolitan Manila). (Johnson, 1973, p. 4).

The Philippine-United States Agricultural Mission of 1946 and the Economic Survey Mission to the Philippines of 1950 (The Bell Mission) both recommended restoration of the College and, in particular, support for agricultural research at the College's experiment station. The latter was founded in 1918, but never received strong financial backing (Call, 1955).

In 1952 the Mutual Security Agency (forerunner of the ICA and USAID) agreed to fund rehabilitation of the College, and the first installment of a \$2.5 million contract between Cornell University and UPCoA to implement this rehabilitation was signed in June of that year. From 1952-1960, the life of the contract, Cornell supplied over 80 man years of assistance. Of the 51

Table 4.6: Distribution of total research expenditures from government and private sources, FY 1970-71.

I T E M	Government Agencies				Private Sector			TOTAL
	Colleges and universities	DANR proper	NSDR agencies	Commodity institute	ICRI	Others	Sub-Total	
Salaries	P4,657,333.24	P3,500,518.18	P 2,391,016.00	P 4,501,266.00	P 1,625,000.00	P2,641,070.00	P 3,666,070.00	P18,956,256.42
Wages	684,778.00	965,089.56	80,096.00	2,007,626.00	5,330,000.00	206,613.00	5,896,613.00	9,234,097.56
Travel	284,740.00	549,964.66	148,275.00	259,742.00	845,000.00	219,140.00	1,663,140.00	2,226,561.66
Supplies	1,136,260.68	483,857.48	554,532.50	553,000.00	1,625,000.00	308,150.00	2,023,710.00	4,751,467.64
Sundries	1,060,543.00	211,925.38	321,590.00	951,764.00	3,380,000.00	194,160.00	3,574,160.00	6,120,652.38
Equipment	692,948.00	171,620.00	1,687,240.00	2,418,200.00	1,332,500.00	407,578.00	1,760,078.00	6,730,086.50
Capital outlay	545,270.00	232,000.00	3,146,300.00	2,774,000.00	2,080,000.00	1,269,510.00	3,249,510.00	9,966,180.00
Special purposes	406,822.00	486,787.68	1,940,770.00	739,368.00	942,000.00	1,424,050.00	2,366,550.00	5,922,237.68
Professional services	130,000.00							130,000.00
TOTAL	P9,408,749.92	P6,843,822.91	P10,269,926.00	P14,204,860.00	P7,160,000.00	P6,170,931.00	P23,338,931.00	764,066,222.83

1 As furnished by the individual agencies concerned; includes levies and grants-in-aid.

Note: In 1970-71, 6.4 Pesos = \$1.

Source: NARSS, 1971, p. 28.

Table 4.7: Foreign aid resources for agricultural research development and training in FY 1970-71. 4-Year Development Plan FY 1972-75, NEC.

Agency	Foreign Aid			Peso support	
	\$	%	P equivalent	P	%
FAO-Technical Assistance	80,000	0.20	510,500	-	—
Ford Foundation	1,692,661	3.65	10,799,177	—	—
USAID*	28,313,000	61.02	180,636,940	1,912,000	2.56
UN Development Program	10,359,270	22.33	66,092,143	35,047,861	46.91
World Food Program	5,953,700	12.83	37,984,606	37,752,704	50.53
TOTAL	46,398,631	100.0	296,023,266	74,712,565	100.0

* Includes proceeds from PL480 which amounted to \$26.5 million and \$750,000 for agricultural research and development.

Source: NARSS, 1971, p. 35.

Table 4.8: Current research projects by problem area and agency, FY 1970-71. Partial list.

Problem Area	UPCA		Other U.P. colleges		Other universities and colleges		DANR		NSDB		NRCP		Private sector		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Crops	261	70.00	18	4.82	40	10.70	1	0.27	20	5.35	12	3.22	21	5.64	373	100
Livestock	49	31.80	65	42.26	2	1.30	29	18.80	—	—	4	2.60	5	3.24	154	100
Soil & Water	15	65.25	2	8.70	—	—	—	—	1	4.35	2	8.70	3	13.00	23	100
Fisheries	—	—	16	26.20	12	19.70	33	54.10	—	—	—	—	—	—	61	100
Forestry	5	1.61	18	5.78	—	—	13	4.18	275	88.43	—	—	—	—	311	100
Biological, economics, engineering and chemistry	105	40.85	33	12.84	14	5.45	2	0.78	—	—	91	35.40	12	4.68	257	100
TOTAL	435	36.90	152	12.89	68	5.76	78	6.61	296	25.16	109	9.24	41	3.44	1197	100

Table 4.9: Completed research projects by problem area and agency, FY 1967-70. Partial list.

Problem Area	UPCA		Other U.P. colleges		Other universities and colleges		DANR		NSDB		NRCP		Private sector		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Crops	385	48.40	13	1.60	336	46.00	—	2.65	—	—	—	—	32	4.00	796	100
Livestock	99	32.90	85	28.20	101	33.60	8	—	—	—	—	—	8	2.65	301	100
Soil & water	14	42.43	—	—	14	42.43	—	45.00	—	—	—	—	5	15.14	33	100
Fisheries	—	—	17	55.00	—	—	14	—	—	—	—	—	—	—	31	100
Forestry	—	—	28	11.16	1	0.39	—	—	222	88.46	—	—	—	—	251	100
Biological, economics, engineering and chemistry	226	65.50	52	15.10	54	15.64	—	—	—	—	—	—	13	8.76	345	100
TOTAL	724	41.20	195	11.10	536	30.50	22	1.25	—	—	—	—	58	8.30	1757	100

Source: NARSS, 1971, p. 39a.

Table 4.10: Reported current and completed projects in crop research, FY 1967-70.

Problem Area	Rice	Sugarcane	Vegetables	Corn	Legumes	Fruits	Tobacco	Coconut	Sorghum	Fibers	Rootcrops	Forage	TOTAL
Basic studies	—	4	—	—	—	8	—	3	—	—	—	—	15
Breeding & cytology	46	87	38	41	19	18	37	10	16	15	10	—	337
Physiology	28	1	—	5	8	9	2	18	2	3	3	—	88
Management													
Fertilization	71	33	54	51	47	6	7	1	26	8	13	—	317
Spacing	17	14	27	14	17	1	1	2	8	10	2	—	111
Practices	28	7	3	13	5	2	3	5	5	1	13	25	107
Others	14	18	7	8	12	8	2	6	7	9	3	—	93
Pest control	33	24	20	15	11	16	8	11	3	4	4	—	144
Disease control	22	64	30	19	11	22	9	8	3	4	4	—	199
Weed control	56	10	4	10	3	1	1	—	—	1	7	—	101
Processing													
Drying	6	—	—	2	—	—	—	2	—	—	—	—	10
Product development	18	4	17	9	11	11	17	16	2	10	4	—	119
Economics	35	3	6	9	2	2	3	4	1	5	5	—	84
TOTAL	374	269	215	196	146	144	90	85	73	70	68	25	1725
% TOTAL	21.7	15.5	12.4	11.4	8.5	6.6	5.2	4.9	4.2	4.0	3.9	1.4	100.0

Source: NARSS, 1971, p. 39b.

Table 4.11: Reported current and completed projects in animal science, FY 1967-1970.

Problem area	Beef and				Total
	Poultry	Swine	Carabeef	Dairy	
Management	19	7	2	—	28
Growth and physiology	9	17	3	1	30
Reproductive physiology	11	9	2	1	23
Nutrition	66	46	10	2	124
Breeding and genetics	17	10	4	—	31
Disease control	3	2	1	—	6
Parasite control	3	—	1	—	4
Product utilization	8	13	13	4	38
Economics and marketing	8	6	5	—	19
TOTAL	144	110	41	8	303

Source: NARSS, 1971, p.40.

staff sent to Los Banos, 85% came directly from Cornell or were Cornell graduates, an unusually high percentage for American universities staff technical assistance contracts (Johnson, 1973). The Los Banos campus was sometimes referred to as "Cornell East." By 1960, 10% of Cornell's agriculture faculty had served at Los Banos.

The Cornell staff worked in a dozen different departments of the College, and reestablished the Central Experiment Station as the Farm Management Division of the College. The Cornell staff generally devoted about 1/3 of their time to research. Although a Master's degree program was begun in 1951, in practice the College was "still primarily a first degree granting institution in 1960." Seventy-two UPCoA faculty members were sent abroad for training under the contract (Johnson, 1971).

From 1965-1972, Cornell assisted the development of the graduate program at UPCoA under a Ford Foundation contract, thus continuing the lost-standing affiliation between the two universities. Turk (1974) provides a full history of Cornell's involvement at Los Banos. The College also received a \$6 million World Bank loan in the mid-'sixties, the Bank's first loan for higher education anywhere (Johnson, 1973). In addition to IRRI, two new research institutes were established on or near the campus: The Dairy Training and Research Institute (with financial support from the U.N.) and the Rodent Research Center, established in 1968 as a joint project of the Philippine government and USAID.

In 1967 the College became the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), providing graduate training to students from other countries in the region, with substantial funding from USAID. In 1972, the College was renamed the University of the Philippines at Los Banos (UPLB), reflecting its rising prestige. In 1973, faculty numbered 560, including 150 Ph.D.s, and UPLB was considered "the premier agricultural university in Southeast Asia." (Johnson, 1973, p. 21).

4.3 The Philippine Council for Agricultural Research (PCAR)

The NARSS Technical Panel's 1971 report concluded that agricultural research in the Philippines suffered from lack of coordination:

(1) Although a substantial amount of funds was being allocated by government for agricultural research, the useful research output was limited and was having little impact on the agriculture sector.

(2) There was inadequate planning and coordination at the national level. Research projects and programs were not necessarily related to national goals nor to plans for agricultural development.

(3) Research resources were highly fragmented as were the allocation of budgets. Funds were allocated to large numbers of discrete, unrelated and frequently overlapping activities. There was also a substantial diversion of appropriated funds to uses other than for the support of research for which they were budgets, and

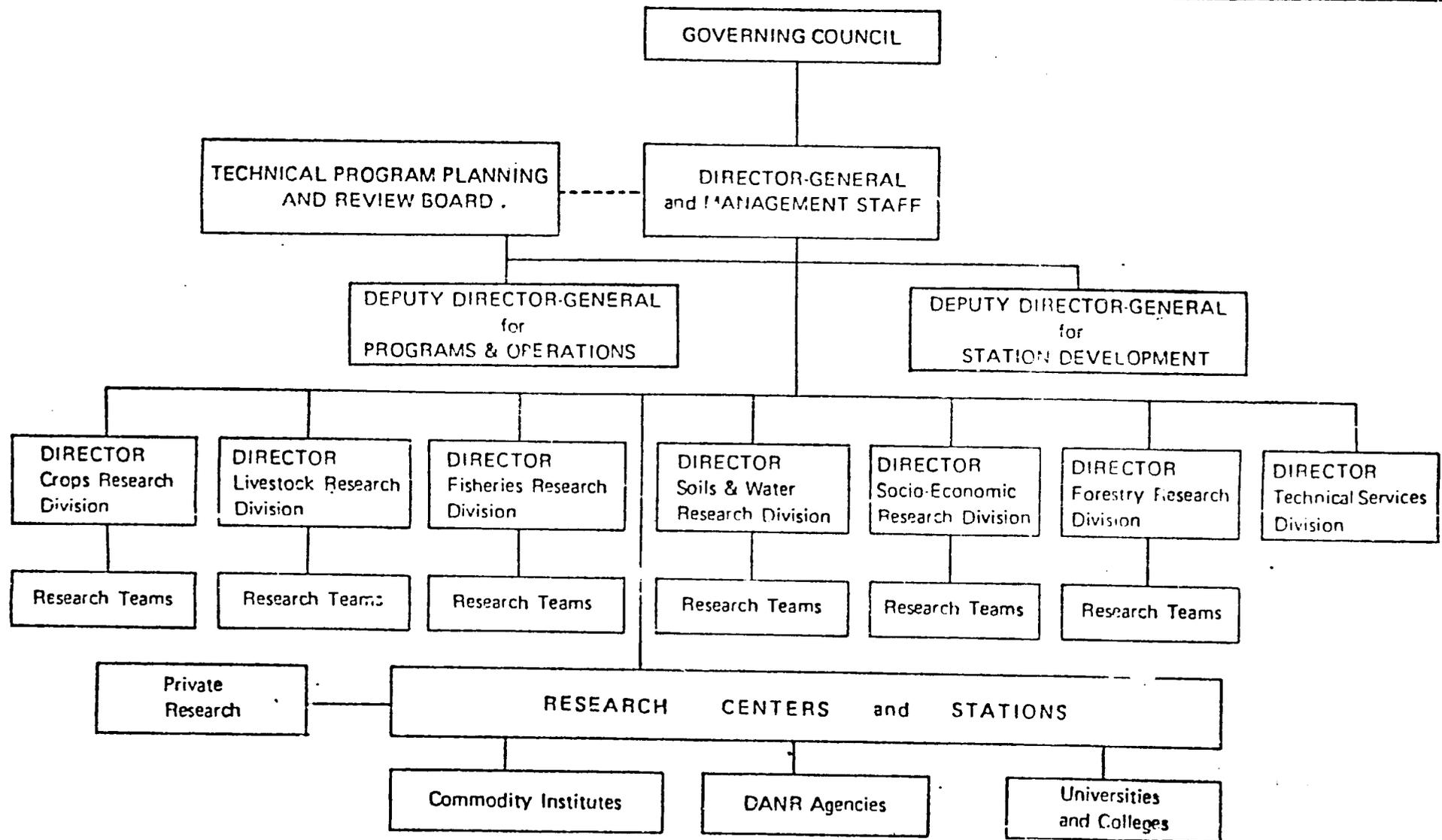
(4) Research was highly personalized in that activities were undertaken in accordance with the individual's personal interest rather than in support of planned programs designed to further national development. (USAID, 1975, p. 12)

The panel recommended that a special body, the Philippine Council for Agricultural Research (PCAR), be created to coordinate governmental and university research activities. PCAR was established by Presidential Decree No. 48 on November 10, 1972; one observer remarks that its creation was "facilitated" by martial law which was declared that year (Paulino, 1977).

PCAR's organizational structure is shown in Figure 4.1. The PCAR

Figure 4.1

ORGANIZATIONAL STRUCTURE OF THE PHILIPPINE COUNCIL FOR AGRICULTURAL RESEARCH (PCAR)



Source: USAID, 1975, p. 13.

network, comprising (as of 1975) 14 main stations, or Agricultural Research Centers, and 56 sub-stations, or cooperating Stations, is listed in Table 4.12; the locations of the various stations are shown in Figure 4.2. (At least 3 additional main stations have since been added.) PCAR reviews and evaluates all government-funded research projects, assessing their priority importance, design quality and relevance, and weeding out duplication of research efforts. Within two years, PCAR had evaluated some 1,100 on-going research projects and trimmed their number to 658, by consolidating duplicative efforts and eliminating low priority and dormant "ghost" projects (Madamba, 1977). More than 30 commodity teams, composed of scientists with different specialties (e.g., for crops, a plant breeder, a soil scientist, an entomologist, etc.) have been created to oversee research programs.

PCAR's increasingly important role in research management is reflected in the growth of its budget, depicted in Table 4.13. In part this

Table 4.13: PCAR's Budget

1973 (8 months)	1.5 million Pesos*
1974	6.0 " "
1975	14.0 " "
1976	23.2 " "
1977	51.4 " "
1978	62.0 " "

* Note: 7.4 pesos = \$1.

Source: USAID, 1978, p. 5.

reflects the expansion of PCAR's responsibilities to include non-agricultural natural resources research (i.e. mining, excluding petroleum); the agency was renamed the Philippine Council for Agriculture and Resources

Table 4.12

Map Number	Name and Location Agricultural Research Centers	Main Station for	Cooperating Station for
1	National Agricultural Research Center, Los Baños, Laguna	Abaca, Fruit, Oils & Spices, Rice, Vegetables, Horticulture, Dairy, Forestry, Wildlife, Soil, Water, R. Sociology, Macro-Econ.	Cacao, Tea, Coffee, Coconut, Corn, Cotton, Forage/Pasture, Root Crops, Sorghum, Soybeans, Sugarcane, Tobacco, Poultry, Swine.
2	Cagayan Valley Agricultural Research Center, Ahague, Isabela	Tobacco	Corn, Cotton, Oils & Spices, Rice, Sorghum, Soybeans, Soil & Water.
3	Central Luzon Agricultural Research Center, Muñoz, Nueva Ecija	Cotton and other fiber crops and sericulture	Forage/Pasture, Oils & Spices, Rice, Vegetable, Beef, Dairy, Poultry, Swine, I. Fisheries, Water, Rural Socio-Econ.
4	Navotas Fishing Complex, Navotas, Rizal	Marine Fisheries	-
5	National Livestock Research Center Alabang, Rizal	Poultry, Swine	-
6	Bicol Agricultural Research Center Camarines Sur	-	Abaca, Coconut, Corn, Rice, Root C., Sorghum, Soybeans, Vegetable, I. Fisheries, Soil, Water, R. Sociology, Econ.
7	National Fishery Research Center Leganes, Iloilo	I. Fisheries (Brackish-Dangus), I. Fisheries (Brackish-Streams) soybeans, Sugarcane	-
8	La Granja Agricultural Research Center, La Carlota City	Soybeans, Sugarcane	Cotton, Corn, Rice, Sorghum, Vegetables, Beef, Swine, Soil & Water Resources, R. Sociology, Economics,
9	Palawan Agricultural Research Center, Aborlan, Palawan	-	Cacao, Coconut, Coffee, Fruit, Oils, Soybeans, Tea, Beef, Soil Resources.
10	Eastern Visayas Agricultural Research Center, Baybay, Leyte	Root Crops	Coconut, Corn, Rice, Sorghum, Sugarcane, Beef, Water, R. Sociology, Economics
11	Central Mindanao Agricultural Research Center I, Malaybalay, Bukidnon	Forage/Pasture, Beef	Cacao, Coffee, Tea, Dairy, Forestry, Wildlife, Soil,
12	Central Mindanao Agricultural Research Center II, Musuan, Bukidnon	-	Corn, Forage/Pasture, Rubber, Sorghum, Soybeans, Beef, Water, R. Sociology, Economics
13	Davao Agricultural Research Center, Davao City	Cacao, Coconut, Coffee, Tea	Abaca, Cotton, Fruit, Soybean, Spices, Horticulture, Beef, Soil.
14	Southern Mindanao Agricultural Research Center, Kabacan, Cotabato	Corn, rubber (for small holders system), Sorghum	Cotton, Fruit, Oils, Rice, Root Crops, Soybeans, Vegetables, Native Tobacco, Beef, Poultry, Swine, Soil & Water Resources

Map Number	Name and Location Cooperating Station	Coordinated by Center No.	Commodity(s) to be researched
1	PVTA Nangalisan Experimental Station, Laang, Ilocos Norte	2	Virginia Tobacco
2	Ilocos Norte Institute of Technology, Batac, Ilocos Norte	1	Soil Resources, Water Resources
3	Bantay Cotton Experimental Station, Bantay, Ilocos Norte	3	Cotton
4	Baguio Experimental Station Baguio City	3	Sericulture.
5	BFD, Experimental Station Baguio City	1	Forest Produc. and Parks & Wildlife Management

Table 4.12 cont.

6	Mountain State Agricultural College, La Trinidad, Benguet	1,13	Coffee, Fruit, Corn, Horticulture, Tea, Vegetables, R. Sociology and Macro-economics
7	Cagayan Valley Agricultural College, Lal-lo, Cagayan	10	Root Crops
8	Camalaniugan BF Fishery Station, Camalaniugan, Cagayan	7	Inland Fisheries
9	Cagayan Valley Experimental Station, San Mateo, Isabela	1	Rice
10	PTA Tamsuini Experimental Station, Tamsuini, Isabela	2	Native Tobacco
11	EFD, Magat Experimental Station, Diadi, Nueva Vizcaya	1	Forest Prod. and Parks & Wildlife Management
12	PVTA Virginia Tobacco Experimental Station Rosario, La Union	2	Virginia Tobacco
13	BF Fishery Station Lucap/Alaminos, Pangasinan	7	Inland Fisheries
14	PVTA Station Urdaneta, Pangasinan	2	Virginia Tobacco
15	PTA Station Cabiao, Nueva Ecija	2	Native Tobacco
16	Luzon Experimental Station Floridablanca, Pampanga	9	Sugarcane
17	BVE Fishery School Malolos, Bulacan	7	Inland Fisheries
18	Philippine Atomic Research Center, Quezon City	1	Rice
19	Bureau of Agricultural Economics, Quezon City	1	Macro-economics
20	National Food & Agriculture Council Marketing Research Unit, Quezon City	1	Macro-economics
21	PTA Tobacco Research & Development Center, Quezon City	2	Native Tobacco
22	Alabang Central Soil Research Station, Alabang, Rizal	1	Soil Resources
23	Don Severino National Agricultural College, Indang, Cavite	13	Cacao, Coffee, Tea
24	Manuel A. Roxas Memorial Experimental Station, Lipa City	1	Fruit Crops
25	BF Fishery Station Calatagan, Batangas	4	Marine Fisheries
26	FCA Coconut Station Alaminos, Laguna	17	Coconut
27	Tisong Coconut Experimental Station, Tisong, Quezon	13	Coconut
28	BF Fishery Station Mercedes, Camarines Norte	4	Marine Fisheries
29	Tigson Abaca Seabank Tigson, Camarines Sur	1	Abaca
30	Albay Parks & Wildlife Research Station, Albay, Albay	1	Forest Prod. and Parks & Wildlife Management
31	Milagros Stock Farm Milagros, Masbate	11	Forage/Pasture Buol/Carabeol
32	Victoria Horticultural	1	Fruit Crops

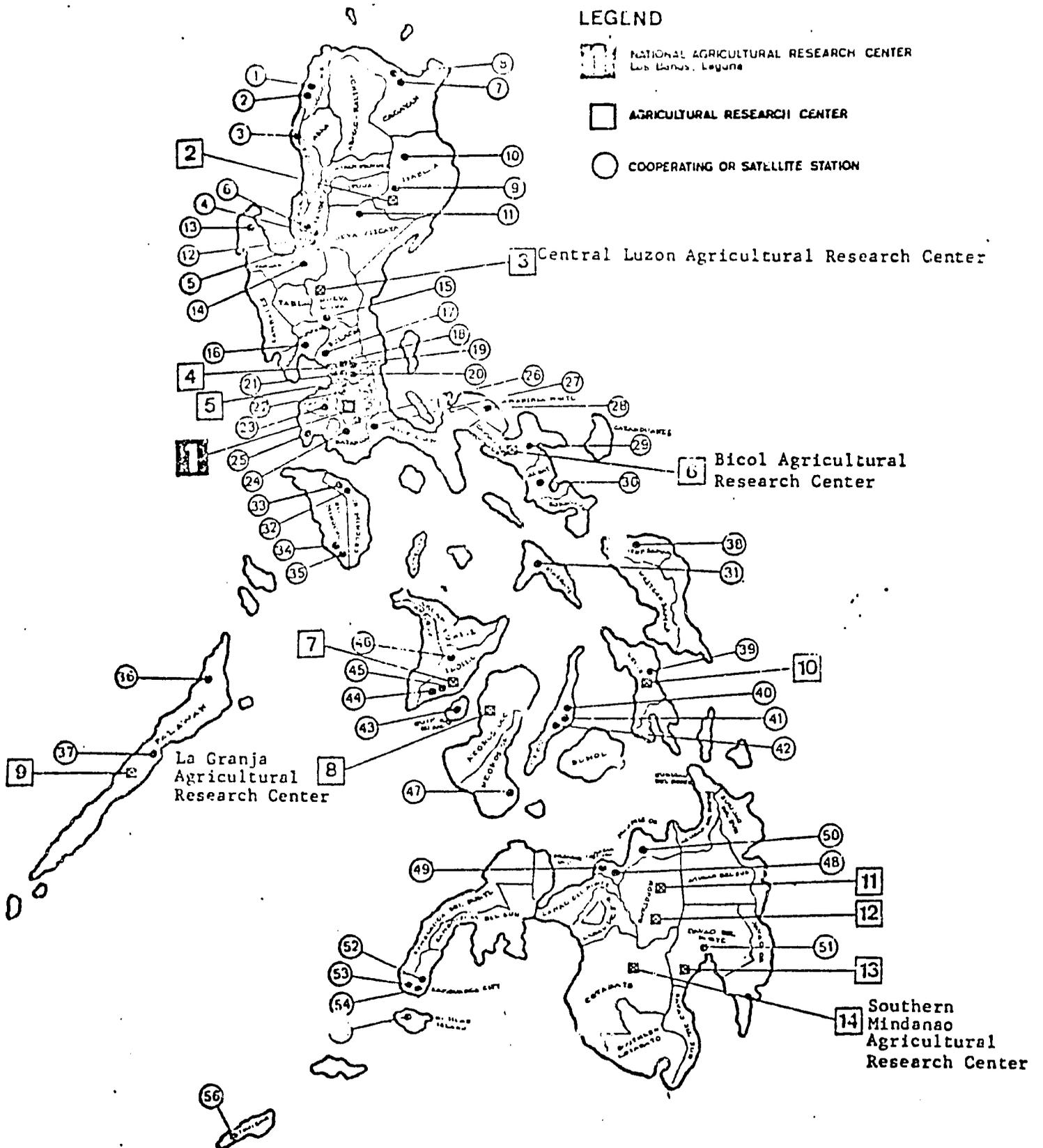
Table 4.12 cont.

Map Number	Name and Location Cooperating Station	Coordinated by Center No.	Commodity(s) to be researched
33	BF Fishery Station Nauja, Oriental Mindoro	7	Inland Fisheries
34	Mindoro Demonstration Farm, San Jose, Occidental Mindoro	2 & 3	Virginia Tobacco Cotton
35	Mindoro Parks & Wildlife Research Station, San Jose, Occidental Mindoro	1	Parks and Wildlife Management
36	Malampaya Fishery Station Malampaya, Palawan	4	Marine Fisheries
37	Palawan Wildlife Management Station, Puerto Princesa	1	Forest Prod. and Parks & Wildlife Management
38	University of Eastern Philippines, Catarman, Samar	1,10,13	Coconut, Root Crops, Spices, R. Sociology, Macro-economics
39	Abuyog Experimental Station Abuyog, Leyte	1	Abaca
40	Mandaue Experimental Station Mandaue, Cebu	1	Fruit Crops
41	University of San Carlos Cebu City	1	R. Sociology Macro-economics
42	Cebu Reforestation & Wildlife Research Station, Cebu City	1	Forest Prod. and Parks & Wildlife Management
43	Guimaras Fruit Station Guimaras Island	1	Fruit Crops
44	Central Philippine University Iloilo City	1	Rice
45	Visayas Rice Experimental Station, Iloilo City	1	Rice, Water Resources
46	Iloilo National College of Agriculture, Lambunao, Iloilo	13	Cacao, Coffee, Tea
47	Siliman University Dumaguete City	1	Ind. Oils & Spices
48	Xavier University Cagayan de Oro City	13	Rural Sociology Macro-economics
49	MSU Naawan Fishery Station Naawan, Misamis Oriental	7	Inland Fisheries
50	EPI Horticultural Station Claveria, Misamis Oriental	1,2	Vegetable Crops Native Tobacco
51	Twin Rivers Research Center Tagum, Davao del Norte	1	Fruit, Vegetables
52	PCA Research Station San Ramon Penal Colony Zamboanga City	13	Coconut
53	Zamboanga School of Fishery Zamboanga City	7	Marine Fisheries
54	Zamboanga Forest Experimental Station, Zamboanga City	1	Forest Prod. and Parks & Wildlife Management
55	U.P. Land Grant Station (Research Center for Commercial Rubber Prod) Basilan City	13,14,1	Coconut Fruit, Rubber
56	MSU Bongao Fishery Station Tawi-Tawi	4	Marine Fisheries

Source: USAID, 1975, Annex G.

Figure 4.2

PCAR NETWORK OF AGRICULTURAL RESEARCH CENTERS AND COOPERATING STATIONS



Research (PCARR) by Presidential Decree No. 864 at the end of 1975.

Budget authority remains in the hands of the various government agencies, e.g., the line bureaus (Bureau of Plant Industry, etc.) of the Ministry of Agriculture, the organization of which is shown in Figure 4.3.¹ PCARR's control over research is thus less than total. Gradually, however, PCARR's ties to the government Budget Commission, which passes on budget requests from the various agencies, are becoming closer, "approaching the stage whereby research fund releases will be based on PCARR's recommendations." (USAID, 1978, p. 5.) The distribution of research projects among agencies, as of December 1976, is indicated in Table 4.14.

Table 4.14: Distribution of Research Projects

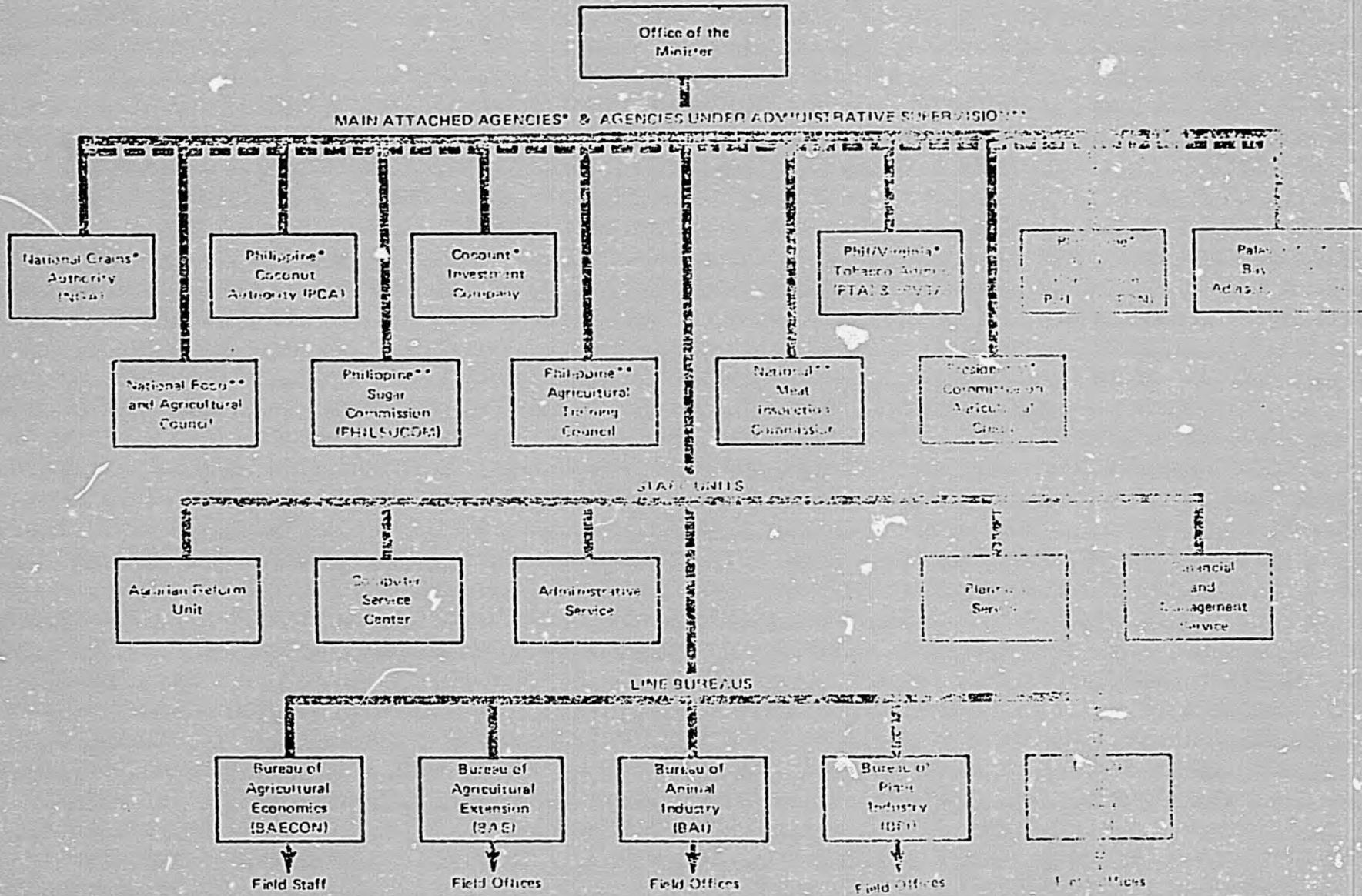
<u>Agency</u>	<u>Percent of Projects</u>
Department of Agriculture agencies	28
Department of Natural Resources agencies	10
UPLB	35
Other colleges/universities	7
Commodity institutes	11
NSDB agencies	2
Total:	100

Source: Madamba, 1977, p. 15.

In 1973-74, PCAR conducted a manpower survey and found that 237 Ph.D.'s, 509 M.S. degree holders, and 1,488 B.S. degree holders were available for research in agriculture, fisheries and forestry in the Philippines. They devoted roughly 50% of their time to research-oriented

¹The Department of Agriculture's organization is further analyzed in the 9-volume report of the Kansas State University Management Analysis Team (1977), funded by USAID.

Figure 4.3: Organization of the Ministry of Agriculture



World Bank, 1978

activities (Madamba, 1977).

In March 1977, PCARR published a listing of all ongoing research projects, and annual updatings were planned. These could not be located in Washington, but presumably these and other PCARR documents would provide more up-to-date information on research expenditures and commodity orientation.

A study of the returns to rice research in the Philippines by Flores Evenson and Hayami (1978) provides a valuable overview of research investments for this crop, which occupies 35% of the country's total cropped area. The study includes time series expenditure data for the period 1959-75. Comparable data for other commodities or problem areas does not appear to be readily available.

} what did the study

4.4 Recent USAID involvement

In 1975, following an April 1974 review of PCAR by Dr. Albert Moseman, USAID authorized a \$5 million loan to the Philippines for an Agricultural Research Project (No. 492-0280; hereafter referred to AR-I). The project was restricted to four research centers: 1) Central Luzon Agricultural Research Center which includes CSLU; 2) Bicol Agricultural Research Center; 3) La Granja Agricultural Research Center (in Negros Occidental) which includes an old DANR station and the Philippine Sugar Institute Station, and 4) Southern Mindanao Agricultural Research Center, built around the Mindanao Institute of Technology. The project involved construction, provision of libraries and equipment, training for 26 Ph.D.'s and 106 M.S.'s in the Philippines and 8 Ph.D.'s abroad (USAID, 1980a).

From 1974-80, USAID also provided \$854,000 for an Aquaculture Research Project (No. 492-0266).

In 1979, USAID authorized a \$10 million loan for Agricultural Research II (Project No. 492-0286; hereafter referred to as AR-II), an extension of AR-I. AR-II provides supports to 5 national and 3 regional research centers, two of which (CLSU and the University of Southern Mindanao) were assisted under AR-I. The others are:

National stations:

- 1) UPLB
- 2) Visayas State College of Agriculture
- 3) Forest Research Institute Regional Stations

Regional stations:

- 4) Palawan National Agricultural College
- 5) Mariano Marcos State University
- 6) Cagayan Valley Institute of Technology

As in AR-I, funds will provide for up-grading facilities and personnel (USAID, 1978).

Since 1970, USAID has provided financial support to IRRI, and the Agency currently provides about 25% of IRRI's core support. IRRI also is the agent for USAID's \$4.3 million regional Extension of Small-scale Agricultural Equipment Project (No. 498-0265), which seeks to develop the small farm equipment industry in four countries (Philippines, Indonesia, India and Thailand) and has a research component (USAID, 1980b).

USAID's support for rodent research at the Los Banos laboratory is expected to continue under an extension of its contract with the Denver

Wildlife Research Center (Project 931-0473, "Control of Vertebrate Pests.")² A 1979 review summarizes the project's accomplishments and planned research activities (USAID, 1979). The German government has also supported vertebrate pest control research in the Philippines.

USAID's Benchmark Soils Project, implemented by the University of Hawaii and the University of Puerto Rico, has carried out soil classification research in the Philippines since 1976 (University of Hawaii, 1978).

Several other USAID projects in the Philippines have agricultural research components, notably the \$5 million Crop Protection Project (No. 492-0288) which is establishing a National Crop Protection Center and 7 regional centers to carry out research and extension in pest control techniques (USAID, 1977). USAID's large Bicol River Basin Development project has involved research in water conservation and some applied research. Similarly, the World Bank's Ilo-Ilo Project includes some multiple cropping research. The Bank is also financing agricultural education in the Philippines. A major World Bank-funded agricultural research project, which will attempt to convert the Department of Agriculture's line bureaus into technical staff bureaus, delegating administrative control to regional directors of agriculture, is currently being prepared. The project will stress applied research on rainfed rice and non-rice crops, and is tentatively budgeted at \$33.6 million.

²Draft project materials obtained from Mr. John De Grazio at DWRC.

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CHAPTER 5. AGRICULTURAL RESEARCH IN BANGLADESH

5.1 Agricultural research before 1971

The first agricultural research institution in what is now Bangladesh was established in Tejgaon, Dacca, in 1908 under the Department of Agriculture of the then province of Bengal. Construction began the following year, and approximately 600 acres were given to the Agricultural Research Institute for field experiments (Cushing, 1979). Research on rice, the country's major crop, began in 1910-11 with the appointment of an Economic Botanist. From 1920-41 useful research was carried out, but from 1941 to 1960 "a general decline occurred due to a number of reasons." (Walker, 1971).

In 1962, most of the buildings and lands were appropriated as the site for the "new capitol." As a result, "virtually no agricultural research was possible in Bangladesh between 1962 and 1973." Available funds were barely sufficient to pay staff salaries, and "the spirit of scientific inquiry gradually disappeared." (World Bank, 1978, pp. 2-3). The Agricultural Research Institute was to be shifted to Joydevpur, but little progress was made. The 1968 Joint Pakistan-American Agricultural Research Review Team took note of the great disparity between the physical facilities, staff and funds available for agricultural research institutions in West Pakistan and those provided for East Pakistan (Report, p. 24).

In 1966, a modest effort was made to revive rice research in East Pakistan via a Ford Foundation grant to IRRI. In that year an IRRI advisor came to East Pakistan, and he managed to acquire irrigation facilities and temporary buildings. An experimental crop, including 303 IRRI selections, was planted at the Savar Dairy Farm in 1966; the following year planting

was shifted to Joydevpur. The East Pakistan Accelerated Rice Research Institute (EPARRI) was formed in 1968, with staff members recruited from the Agricultural Research Institute. It was assigned 30 acres at Joydevpur, and trainees were sent to IRRI. In 1970, EPARRI became the East Pakistan Rice Research Institute (EPRRI), a semi-autonomous organization, with 165 acres at Joydevpur and 4 substations at Comilla, Dinajpur, Habiganj and Barisal.

The East Pakistan Agricultural University (EPAU) was founded at Mymensingh in 1960. From 1961-64, USAID provided funds for construction and equipment, and thereafter these were provided under a World Bank loan. USAID also played a major role in staff development, through an inter-university contract with Texas A & M University. By 1968, Texas A & M had provided 45 man-years of professional services to EPAU (Gray, 1968). Under USAID's training program, some 45 EPAU staff members had completed M.Sc. and Ph.D. degrees in the U.S., and 40 more were in the U.S. working on degrees (Rupel, 1967).

Heavy teaching loads were partly responsible for the relatively small amount of research undertaken at EPAU (Rigney & Roshelley, 1969). Lack of funds for research was also a serious obstacle. Texas A & M advisors repeatedly noted that EPAU suffered from a "lack of full support from its own State Government agencies." (Gray, 1968). When Texas A & M advisors tried, over a period of three years, to secure P.L. 480 funds for research on Newcastle disease at Mymensingh, they were frustrated by a lack of approval from the Pakistan government: "everything appears to be present except cooperation from the Government of Pakistan." (Rudder, 1967).

In early 1971, a 4-man University of Georgia team was sent to EPAU to help establish a research program, but they were evacuated in April due to the independence war. (University of Georgia, 1971).

5.2 Organization of agricultural research

Agricultural research in Bangladesh is conducted by a number of institutes under a number of government ministries. (See Figure 5.1).

The Bangladesh Agricultural University (BAU -- formerly EPAU) still conducts relatively little research; it is primarily an educational institution in keeping with a Bangladesh government policy decision that agricultural research "should be firmly in the Ministry of Agriculture." (USAID, 1975, p. 9). BAU has a staff of 300, including 78 Ph.D's (as of 1978), and it trains most of the scientists for Bangladesh's research institutions. The university allocates only 5% of its financial resources to research, most of which is for M.Sc. level thesis work (World Bank, 1978).

The Bangladesh Agricultural Research Institute (BARI) and the Bangladesh Rice Research Institute (BRRI) described in separate sections, below, are by far the largest of the country's research institutions. There are separate research institutes for jute (the country's main export), sugarcane, tea, livestock, forestry and fisheries. The staffing and budgets of the principal institutes are presented in Table 5.1.

The breakdown of the budgets of the major institutes for the year 1977-78, between capital and revenue (current) budgets, is presented in Table 5.2. Table 5.3 shows the breakdown of scientific manpower by sector, according to a 1978 survey conducted by the Bangladesh Agricultural Research Council. Of the 914 scientists, 112 had Ph.D. degrees.

The Jute Research Institute, near Dacca, has two wings, one dealing with agriculture and the other with industrial processes. The Agricultural Research Wing has a staff of 35, including 4 Ph.D's, and 4 sub-stations. It

Figure 5.1: Institutions Conducting Agricultural Research in Bangladesh, 1978

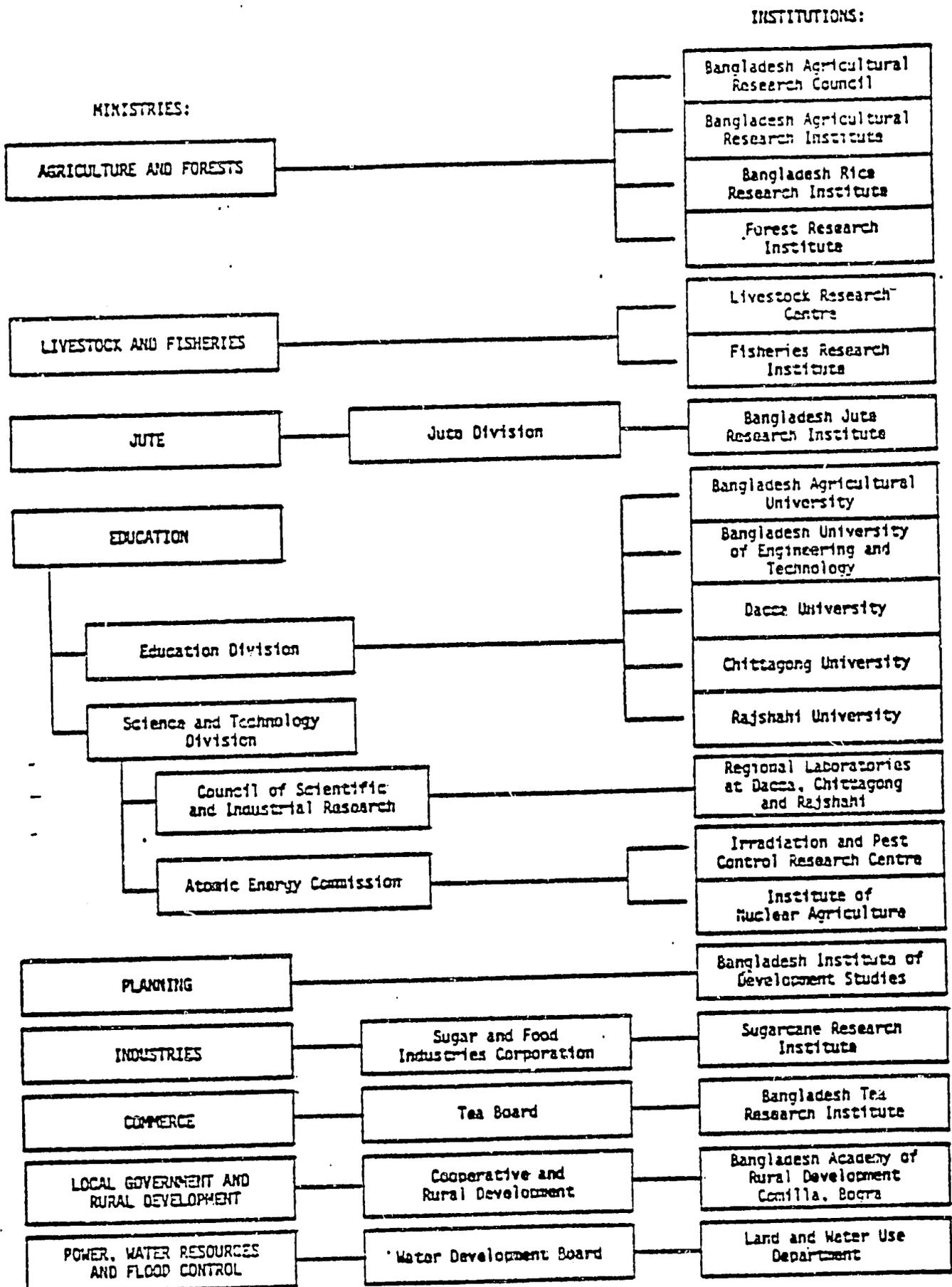


Table 5.1: Comparative staffing and funding of some of the agricultural research institutions, Bangladesh.

Institution	Staffing "Post in Position" ^{1/}			Average yearly investments in research, 1975-77 ^{2/}		
	Technical Officer	Technical Staff	Total	Capital	Revenue (million taka) ^{3/}	Total
Agr. Research Inst. (DARI) ^{5/}	500	705	1,205	39.00	11.80	51.60
Rice Research Inst. (DRRI)	142	----- ^{3/}	142	10.00	6.10	23.90
Jute Research Inst. (JRI)	63	123	186	1.40	1.00	2.40
Sugarcane Res. Inst. (SRI)	18	-----	18	3.60	1.60	5.20
Inst. Nuclear Agr. (IIA)	23	-----	23	3.70	1.00	4.70
Livestock Res. Center	---	-----	---	2.00	0.80	2.80
Forest Res. Inst.	74	193	267	0.60	0.10	0.70
Fisheries Res. Inst.	17	-----	17	0.62	0.03	0.55
Tea Research Inst. (TRI)	40	108	148	0.22	0.20	0.42
Agr. Res. Council (DARC)	13	-----	13	-----	5.00	5.00
TOTAL	890	1,129	2,019	70.64	26.63	97.27

^{1/}Source: Agricultural Research Inventory in Bangladesh. Part I. DARC July 18, 1978.

^{2/}Source: Strengthening the Bangladesh Agricultural Research System. Preliminary Draft Report of the Joint Research Review Team. August 1978.

^{3/}Not reported.

^{4/}US \$ = Taka 16

^{5/}Revised to reflect recent DARI staff survey.

Table 5.2. Budgets of major institutes, 1977-78

Institute/Centre	Capital	Revenue (million Tk.)	Total
Bangladesh Agricultural Research Institute	15.70	40.00	55.70
Bangladesh Rice Research Institute	15.17	7.07	22.24
Bangladesh Jute Research Institute	3.30	9.18	12.48
Sugarcane Research Institute	2.47	2.12	4.59
Forest Research Institute	5.00	3.60	8.60
Institute of Nuclear Agriculture	1.00	4.00	5.00
Tea Research Institute	3.83	2.87	6.71
Livestock Research Centre	0.61	1.82	2.43
Fisheries Research Institute	-	1.20	1.20

Source: Rahman, 1979, p. 81.

Table 5.3. Manpower resources in agricultural research

Sector	Scientists	Technicians	Total	Per cent by sector
Crops	730	1,036	1,766	80.4
Forestry	74	193	267	12.1
Livestock	29	15	44	2.0
Fisheries	17	11	28	1.3
Others	64	28	92	4.2
Total	914	1,283	2,197	100.0

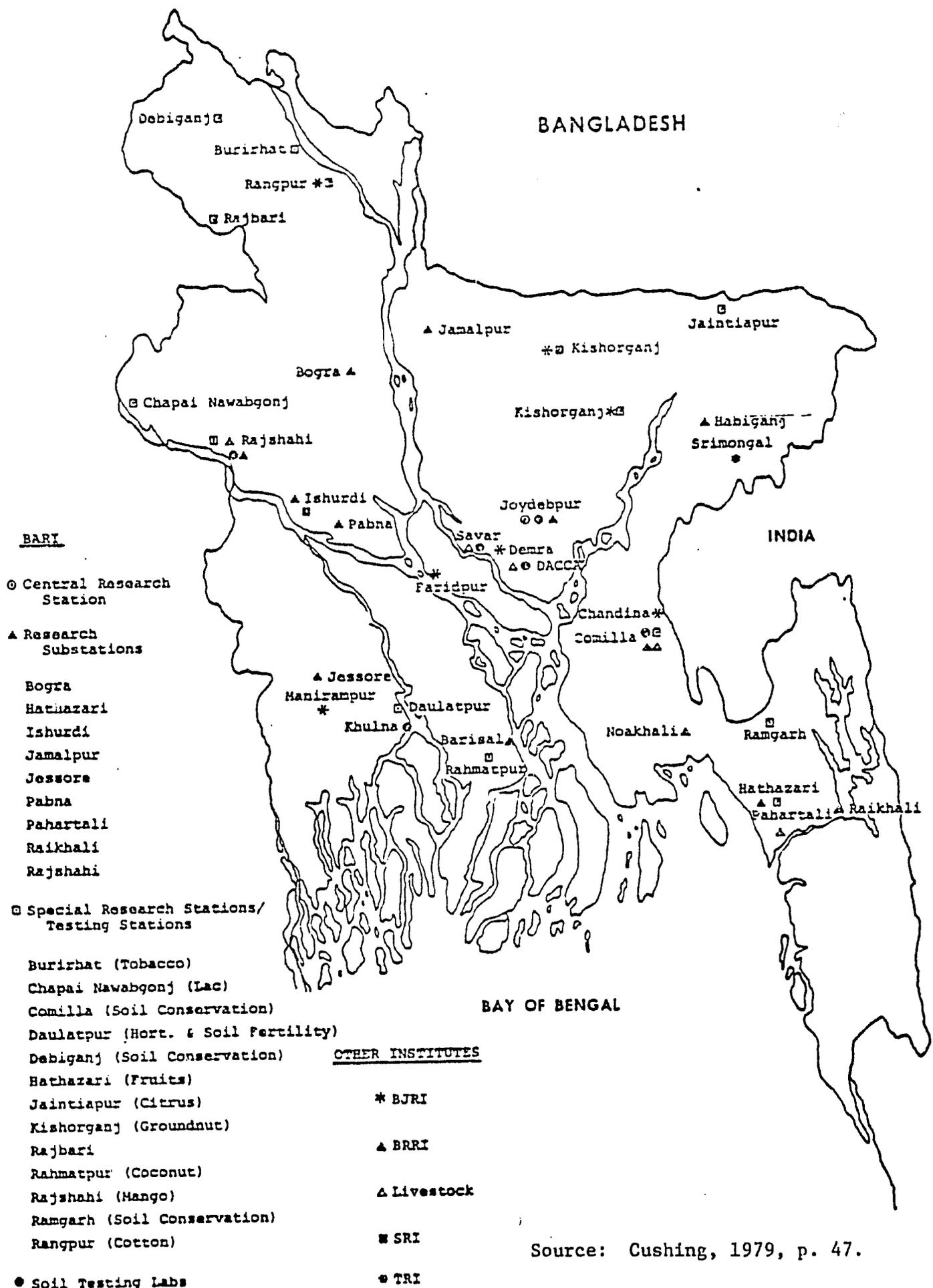
Source: Rahman, 1979, p. 81.

has received aid under the ADB's Jute Seed Project. The Sugarcane Research Institute, established in 1951 but barely damaged in the 1971 war, has a small scientific staff but is conducting research. It is receiving aid from the Australian government. The staff of the Tea Research Institute, in Srimangal, does advisory work in addition to research. A UK-ODM assistance project was under consideration in 1978. The Fisheries Research Institute, in Chandpur, receives Danish aid; the Forestry Research Institute, in Chittagong, receives Swedish aid; and the Livestock Research Institute, which concentrates on vaccine production, receives aid from Germany (World Bank, 1978). The location of some of these institutes, and of BARI's entire sub-station network, is shown in Figure 5.2.

A coordinating agency, the Bangladesh Agricultural Research Council (BARC) was established by ordinance in April 1973, and came into operation with the appointment of an Executive Vice-Chairman in May 1974. At the time, an FAO team led by Dr. Albert H. Moseman recommended that the BARC have operational responsibility to "conduct research," but BARC's power was initially limited to "coordination." (USAID, 1975, p. 49). BARC's position in the overall research system is indicated in Figure 5.3.

BARC's authority was extended in 1976 when it began to operate a research grant scheme, by which it directs financial support to research efforts in priority areas. Where a project involves more than one Institute, BARC has been able to set up Coordinated Research Projects, three of which -- in soybeans, vegetables and pulses -- were in operation in 1978 (World Bank, 1978). BARC's control of funding remains limited, however. A recent World Bank policy paper, which contains a case study of a "low income Asian country" (clearly, from the contents, Bangladesh) remarks: "despite its statutory powers, the ARC still lacks any real

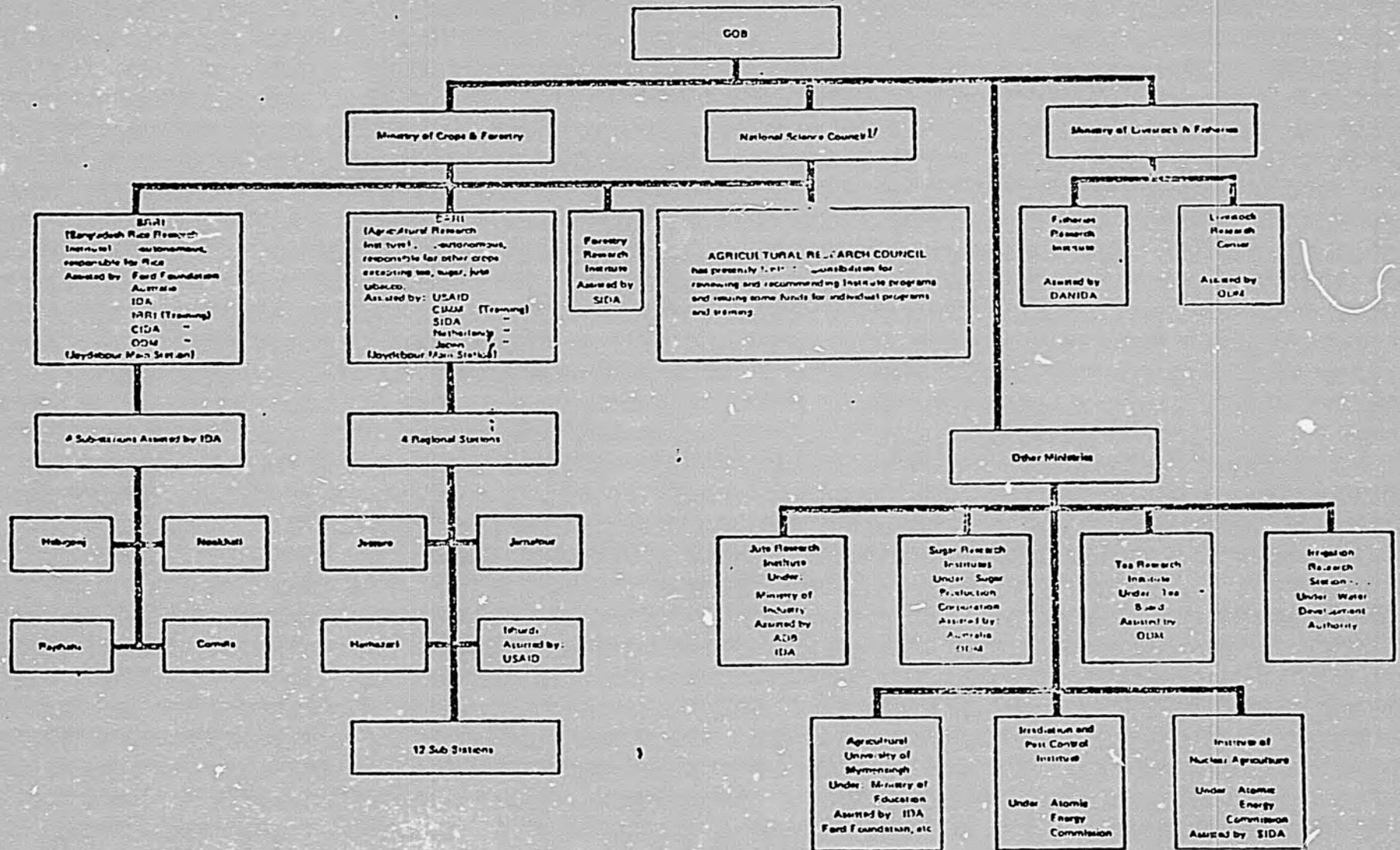
Figure 5.2: BARI and other agricultural research stations in Bangladesh



Source: Cushing, 1979, p. 47.

Figure 5.3

**BANGLADESH
AGRICULTURAL RESEARCH PROJECT
ORGANOGRAM OF AGRICULTURAL RESEARCH RESPONSIBILITIES**



1/ Membership includes the Medical Research Council, Scientific and Industrial Research Council and other apex bodies.

authority as it does not control a significant part of the budget of the main research institutes." (CGIAR, 1978, p. 53). The director of BARI remarked at a 1977 conference, "effective coordination is lacking. In fact, some of the Institutes are more powerful than the Council." (Badruddoza, 1977, p. 8).

Agricultural research expenditures in Bangladesh have risen substantially in recent years, reflecting increased support from foreign donors. In 1974 expenditures amounted to \$1.14 million; from 1975-77, annual expenditures averaged \$6.08 million. (Badruddoza, 1977, pp. 2-3).

5.3 The Bangladesh Rice Research Institute (BRRI)

BRRI, the successor to EPRRI, was established as an autonomous institute in 1973, with a Board of Governors headed by the Minister of Agriculture. Since independence, BRRI has continued to receive considerable support from the Ford Foundation (see Table 5.4). The Foundation has recruited expatriate scientists for BRRI, and has contracted with IRRI for technical and training assistance.

USAID provided a grant of \$149,000 to EPRRI in FY71 for physical development of the rice station and training of personnel. Later USAID provided an additional \$150,000 for the training of 5 Ph.D.'s in the U.S. and 5 M.Sc.'s at UPLB in the Philippines (USAID, 1975).

Under its Cereal Seeds Project (Credit 410-BD), the World Bank

Table 5.4: Ford Foundation Support to BRRI

<u>Year of Grant</u>	<u>Amount</u>
1970	\$400,000
1973	852,000
1976	350,000
1978	250,000

Source: Ford Foundation, Annual Reports, various years.

provided \$1,070,000 to BRRI for construction and equipment at the Joydevpur headquarters and at four of BRRI's five sub-stations (USAID, 1975 and World Bank, 1978).

Presently BRRRI also has bilateral technical assistance programs with the governments of Canada, Australia and the U.K., and with the International Development Research Council and the West African Rice Development Association (Zaman, 1980).

A World Bank report (1978) describes BRRRI as "a fully operative and viable research institution," with a total scientific staff of about 75 including 17 Ph.D.'s. BRRRI's average annual budget 1975-77 was \$1.5 million (Table 5.1). Time series budget and staff development data could not be located in Washington, but presumably is contained in the Institute's annual reports.

BRRRI's research effort has been directed mainly towards the production of high yielding varieties which can be grown in the boro (winter) season with irrigation and in the aman (monsoon) season on shallowly flooded land. Recently greater attention is being devoted to deep-water aman varieties and drought tolerant aus (spring) varieties, (World Bank, 1978).

A separate small rice breeding program is also underway at BAU, and the Institute of Nuclear Agriculture (INA) using irradiation techniques to produce early and high-protein varieties.

5.4 The Bangladesh Agriculture Research Institute (BARI)

BARI became autonomous institute, with its own Board of governors also headed by the Minister of Agriculture, in 1976. Its 310-acre Central Station, in Joydevpur (of which 130 acres are developed: Cushing, 1979), is contiguous to that of BRRRI; it also has 4 regional stations (Table 5.5), and a number of sub-stations, some of which are for specific crops (Table 5.6).

Table 5.5: BARI Regional Stations

<u>Station</u>	<u>Total Area^{1/}</u> acres	<u>Experimental</u> <u>Area</u> acres	<u>Soil</u>	<u>Equipment</u> <u>at Stations^{2/}</u>
Ishurdi	148	112	Silt or clay loam Gangetic alluvium	Fair
Jessore	58	40 (+30) ^{4/}	Silt loam, sandy loam alluvium	Poor
Jamalpur	192	152	Silt or sandy loam alluvium	Poor
Hathazari	152 ^{3/}	120	Clay loam alluvium	Poor

Notes:

^{1/}Net areas after land transferred to other organizations.

^{2/}This is the present situation; see text for development plans.

^{3/}Includes both main station and horticulture project land, much of which is under fruit crops.

^{4/}Land recently handed back to BARI from Horticulture Board.

Source: Cushing, 1979, p. 11.

Table 5.6: BARI Sub-Stations

Station	Total Area acres	Experimental Area acres	Soil	Equipment at Stations	Remarks
Bogra	23+7 ^{1/}	17+6	Sandy dry loam	Good	UNDP/FAO Project base
Fabna	20	15	Sandy loam	Poor	In urban area. Controlled from Ishurdi
Rajshahi	33 ^{2/}	22	Sandy loam	Fair	Separate horticulture area (Kajla)
Debiganj	500	100	Sandy	Poor	Soil conservation project
Dinaipur (Rajbari)	20	0	Silty clay loam	Good	Now used by CARITAS
Rangarh	200	150	Clay loam (hilly)	Poor	To be developed with World Bank aid for Hill Tracts area
Pahartali	36	25	Silt loam	Poor	In urban area
Raikhali	96	35	Silt loam	Poor	Little potential for development; large area cut by river. Access by boat
Api Hawabganj	30	28	Loamy	Poor	
Jaintapur (Sylhet)	118	---	Rocky	Poor	
Kishoreganj	n11	---	---	---	
Rahmatpur (Barisal)	157	71	Sandy loam	Poor	
Mahiganj (Rangpur)	40	30	Sandy loam	Poor	Cotton Station
Rangpur	--	--	--	--	New station proposed ^{3/} with land from BADC
Thakurgoan	--	--	--	--	New station proposed ^{3/}
Durirhat	50	32	Sandy loam	Fair	Tobacco Station

Notes:

^{1/} In two separate areas; Bogra and Cholo para, about 2 miles apart.

^{2/} Additional 33 acres transferred to BARI.

^{3/} To be developed with World Bank funds.

Source: Cushing, 1979, pp. 13-14.

Table 5.7 Financial Status of Schemes or Projects in BARI. As of July 20, 1979

Scheme or Project*	Date of Start	Original Cost Estimate			Revised Cost Estimate			Total Expenditure to Date		
		Taka	F.E.**	Total	Taka	F.E.	Total	Taka	F.E.	Total
				---Thousands of Taka---						
1. Reorganization and strengthening of BARI	21-1-76	43,840	9,448 (USAID, World Bank)	53,280	55,368	19,004	74,372	47,970	3,310	51,280
2. Strengthening of Soil Fertility and Soil Testing Institute	23-12-76	15,773	903	16,676	19,947	500	20,447	4,624	400	5,024
3. Expanded wheat research	12-7-75	1,723	771 (CIIR/IT)	2,494	2,748	600	3,348	1,618	--	1,618
4. Accelerated winter oil seed development program	30-7-75	3,660	3,370 (SIDA)	7,030	3,966	6,972	9,938	1,398	4,137	5,535
5. Potato research station	10-2-76	2,608	2,582 (Holland)	5,190	5,555	6,514	12,069	1,418	1,797	3,215
6. Citrus and vegetable seed research centre	1-4-77	9,920	9,602 (Japan)	19,522	(9,920)**	(9,602)	(19,522)	5,430	6,410	11,840
7. Agricultural research project, Phase II	15-11-78	24,270	41,127	65,397	(24,270)	(41,127)	(65,397)	162	940	1,102
8. Strengthening of tobacco research	2-12-74	2,612	700	3,312	2,944	699	3,643	1,508	280	1,788
9. Expansion of BAI	5-3-77	6,245	--	6,245	30,410	17,000	47,410	3,545	--	3,545
10. Reorganization of BAI including stipend	10-1-77	2,022	--	2,022	(2,022)	--	(2,022)	1,128	--	1,128
11. Shifting of BARI	5-2-76	147,000	15,122 (USAID)	162,130	119,924	47,968	157,892	34,920	40,650	75,570
		259,681	83,625	343,306	277,074	148,986	426,060	103,721	57,924	161,645

* All schemes or projects, with one exception, were originally to be completed by 30-6-78. The present expected completion date is 30-6-80. The exception is the citrus and vegetable research centre which was originally (and still expected) to be completed by 30-6-83.

** F.E. = Foreign Exchange Component. Approximate rate: 15T:1\$US.

*** Figures in parentheses were not revised.

BARI is responsible for research on all food crops except for rice and sugarcane. The Institute's work is comprised of 11 schemes or projects, each of which has its own budget. Total expenditures on each project, as of July 1979, is shown in Table 5.7, providing a partial indication of the commodity-orientation of BARI's research. Time series data on BARI's expenditures is provided in Table 5.8.

Table 5.8: Budget, funds released, and expenditures in BARI, 1970-71 to 1978-79.

<u>Year</u>	<u>Budget</u> (taka)	<u>Funds Released</u> (taka)*	<u>Expenditures</u> (taka)
1970-71	11,899,000	7,246,000	5,157,000
1971-72	22,482,000	20,877,000	5,600,000
1972-73	11,260,000	11,040,000	9,701,000
1973-74	20,027,000	15,353,000	12,531,000
1974-75	12,739,000	9,836,000	8,755,000
1975-76	37,052,000	14,657,000	12,257,000
1976-77	70,000,000	27,100,000	24,200,000
1977-78	55,700,000	43,000,000	42,300,000
1978-79	77,600,000	51,386,300	51,369,857**

*The funds released include donor support provided to BARI except for USAID loan funds in the "Shifting of BARI Scheme."

**These figures are for the first nine months of 1978-79.

Note: 16 taka = \$1.

Source: Cushing, 1979, p. 16.

As Table 5.7 indicates, certain commodity schemes have received support from specific foreign donors, eg. Swedish support for oil seeds research, Dutch support for potato research and Japanese support for horticultural research. The most advanced crop research program (aside

from BRRI's rice research) is generally considered to be wheat, which has received Ford Foundation support via CIMMYT. Bangladesh's wheat acreage has expanded dramatically in recent years.

The largest donor to BARI, by far, has been USAID. USAID's Agricultural Research Project (No. 388-0003), begun in 1976, initially provided a \$4 million loan for farm development, construction and equipment, and a \$2.56 million grant for four senior agriculturalists, several junior agriculturalists and short-term consultants, and overseas training for Bangladeshi scientists (USAID, 1975). This project followed a review of agricultural research in Bangladesh by a 4-man team headed by Dr. Leon Hesser, which found that "except for rice, little useful research is being done." (Hesser et al., 1974, p. 1.)

A World Bank report notes: "Until USAID mounted a project in 1975 to develop the BARI's Central Station, little research was possible. In 1976, under this USAID project meaningful field experimentation recommenced..." (World Bank, 1978, p. 4).

The USAID project subsequently underwent two amendments. One amendment provided an additional \$830,000 grant for to establish a Vertebrate Pest Division, with technical assistance from the Denver Wildlife Research Center (DWRC) and training for one Ph.D. at Bowling Green State University and 2-4 M.Sc.'s at UPLB (USAID, 1977). This component of the project began in November 1978 (DWRC, 1978). The second amendment provided an additional \$832,000 grant to expand and develop the BARI Regional Station at Ishurdi (USAID, 1979).

A second USAID agricultural research project has been proposed for FY81. It would provide \$7.5 million over five years, and is to "concentrate on the dissemination of research findings to farmers." (USAID, 1980.)

Since 1974-75, USAID has been by far the largest donor contributor to BARI, providing over 92% of donor technical assistance projected through 1981-82 (Cushing, 1979, p. 15).

The World Bank is also aiding BARI through its \$6 million Agricultural Research Project. The Bank is funding development of BARI's other three Regional Stations, at Jamalpur, Jessore and Hathazari, and the development of a highland research station at Ramgarh in the Chittagong Hill Tracts. This project also funds construction of an office complex for BARC in Dacca and research projects funded through BARC. As of 1978, BARI had only one Ph.D. degree holder on its staff of 400; the Bank project will fund 25 Ph.D. programs, 20 M.Sc. programs and other short-term training. The proposed distribution of the Ph.D. and M.Sc. degrees, by discipline, is shown in Table 5.9.

The World Bank's Extension and Research Project (Credit 729-BD), which became effective in January 1978, also has a research component: the establishment of 2 BARI sub-stations in the Northwest region, and \$200,000 for BARC's research grant scheme (World Bank, 1978).

A detailed picture of BARI's operations may be found in the Master Plan prepared by Cushing (1979) under IADS-USAID contract.

The World Bank's Bangladesh Land and Water Survey of 1972 recommended expenditures of \$80 million of agricultural research between 1973 and 1983. Actual expenditures from 1973-78 totaled \$20 million. According

Table 5.9: Training to be provided by the World Bank's Agricultural Research Project

<u>Field</u>	<u>PhD</u> ^{1/}	<u>MSc</u> ^{2/}
Plant Breeding	3	3
Plant Introduction	1	-
Plant Physiology	1	1
Plant Pathology	2	2
Agronomy	3	5
Agricultural Engineering	1	1
Horticulture	2	-
Soil and Water Management	3	2
Agricultural Economics	1	1
Chemistry (Plant Physiology)	1	-
Entomology	2	1
Fishery Research	1	2
Animal Husbandry/Breeding	1	1
Dairying	1	-
Animal Nutrition	1	1
Poultry	1	-
	25 ^{3/}	20

^{1/} About 20% would be at BAU, others overseas.

^{2/} All at BAU, with thesis work at Research Institutes.

^{3/} Allocation between research institutions would be decided by BARC.

Source: World Bank, 1978, p. 44.

to the Bank, of the total FY77 expenditure of \$6.5 million, BARI and BIRRI accounted for about 1/3 each, followed by Jute (15%), Forestry, (7%), Fisheries (7%), SRI (4%) and BARC (4%). These figures differ somewhat from those of Cushing, reported in Table 5.1. About 80% of the total expenditure was for capital improvement. BARC research grants accounted for about 15% of operating expenditures (World Bank, 1978, p. 6).

An external review team is currently (July 1980) in Bangladesh, and its report can be expected to update the information presented above.

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CHAPTER 6: AGRICULTURAL RESEARCH IN SOUTH KOREA

6.1 Overview

Formal agricultural research in South Korea began with the establishment of a demonstration farm in Seoul in 1905. The subsequent development of South Korea's research system is succinctly described in a 1977 paper by Young Soo Ham, the Director of the Research Bureau of the Office of Rural Development (ORD). The reader is referred to Ham's paper, reproduced as Appendix C of this report, for an outline of the history, present organization and achievements of the Korean research system.

The ORD, established in 1962, is the main body for agricultural research in Korea. ORD's organization is depicted in Figure 6.1. Locations of experiment stations are shown in Figure 6.2. The research staff at ORD and its predecessor institutions grew considerably between 1945 and 1970, as indicated in Table 6.1.

Table 6.1: Growth in ORD Research Staff, 1945-70

<u>Year</u>	<u>Researchers*</u>
1945	95
1950	195
1957	278
1962	539
1970	856

*Note: Other sources give somewhat lower figures for the number of researchers, probably reflecting different definitions

Source: Kim, 1971, p.58.

Not all of these researchers hold advanced degrees, however. Table 6.2 shows the degrees held by researchers at the Main ORD in 1972 and 1978

Table 6.2: Academic Degrees of Research Officials in Main ORD

<u>Degree</u>	<u>Ph. D.</u>	<u>MS</u>	<u>BS</u>	<u>Total</u>
1972	15	42	438	495
1978	60	130	399	589

Figure 6.1: Organization of the Office of Rural Development

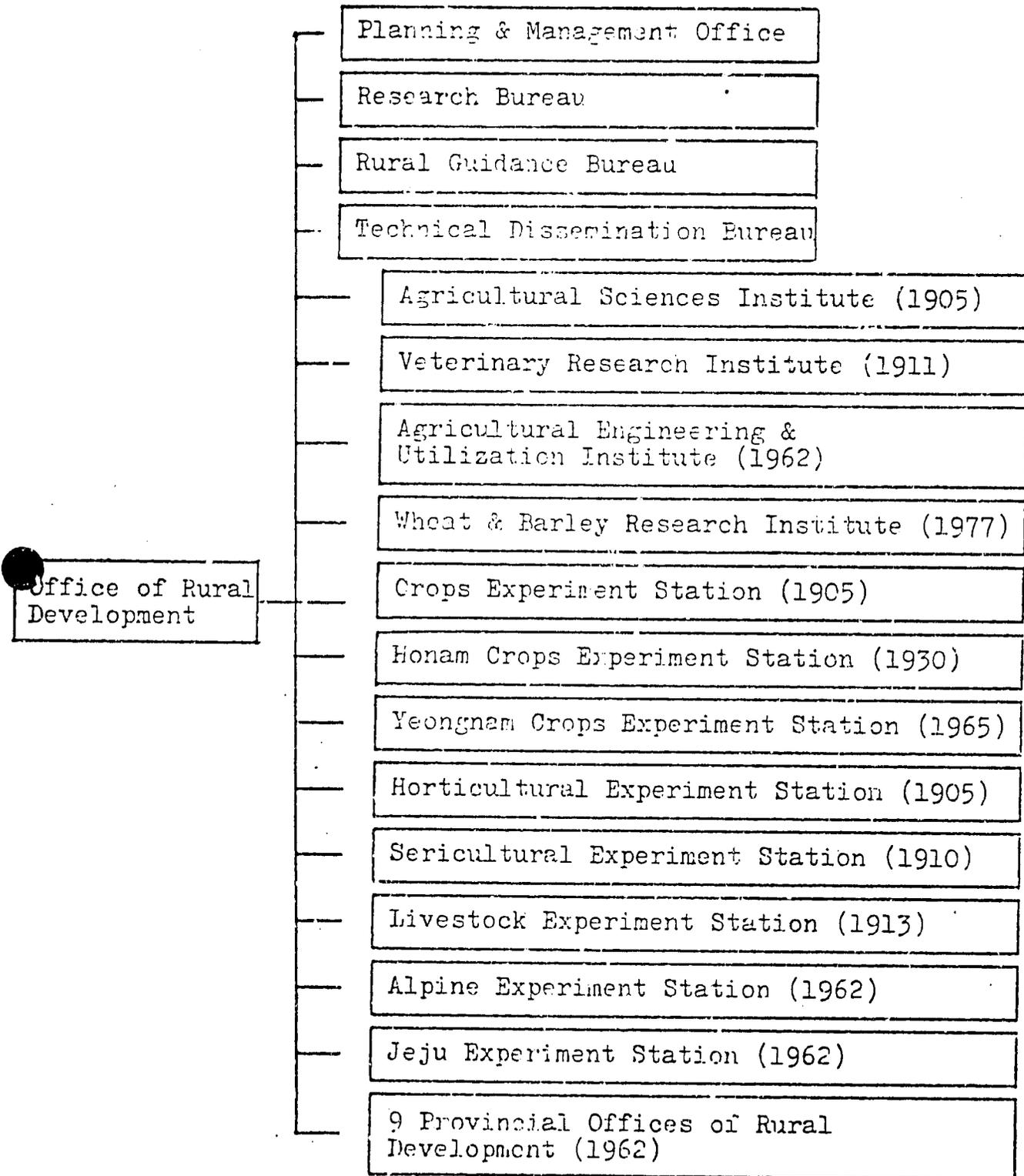
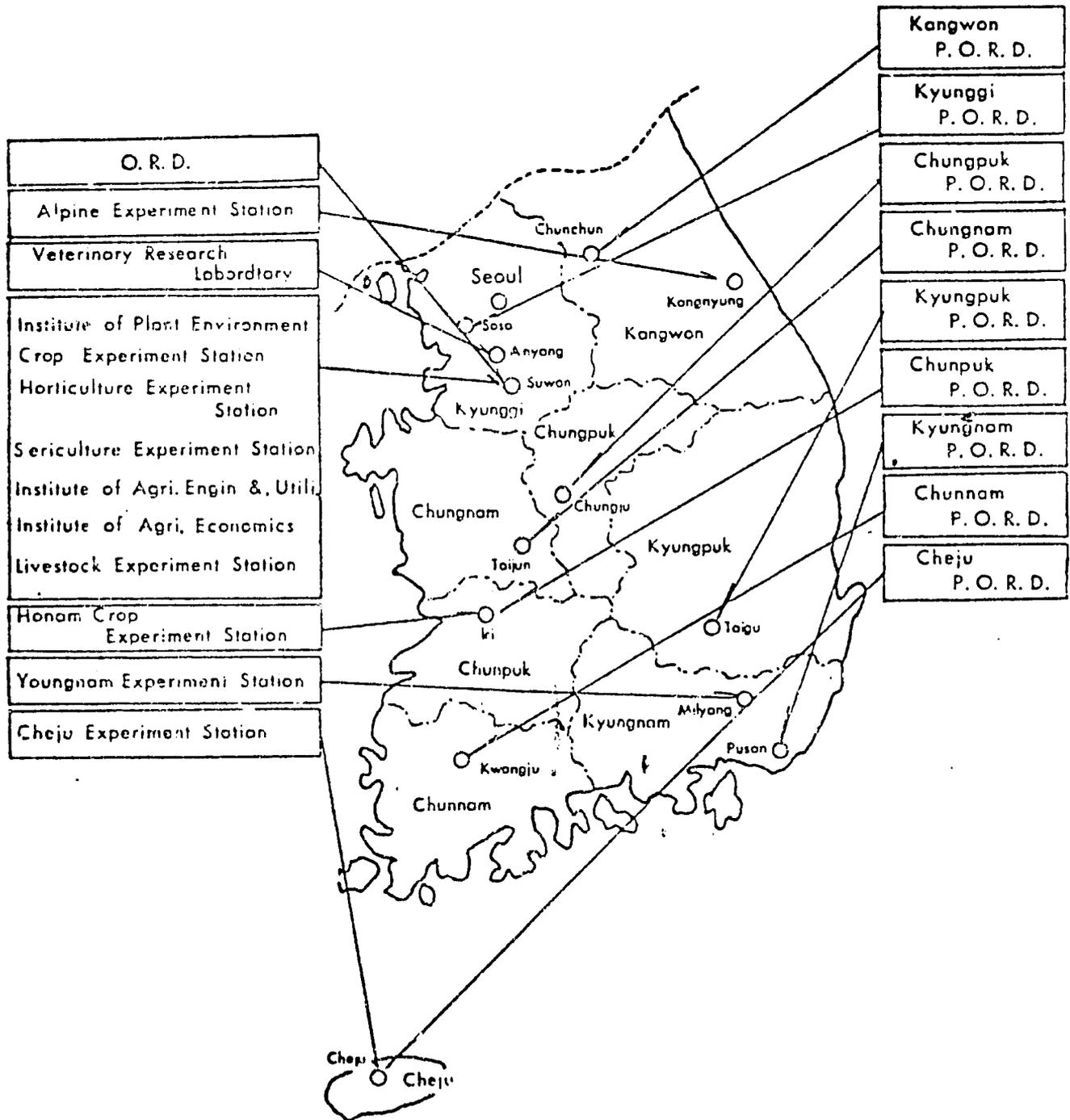


Figure 6.2: Location of ORD Research Units

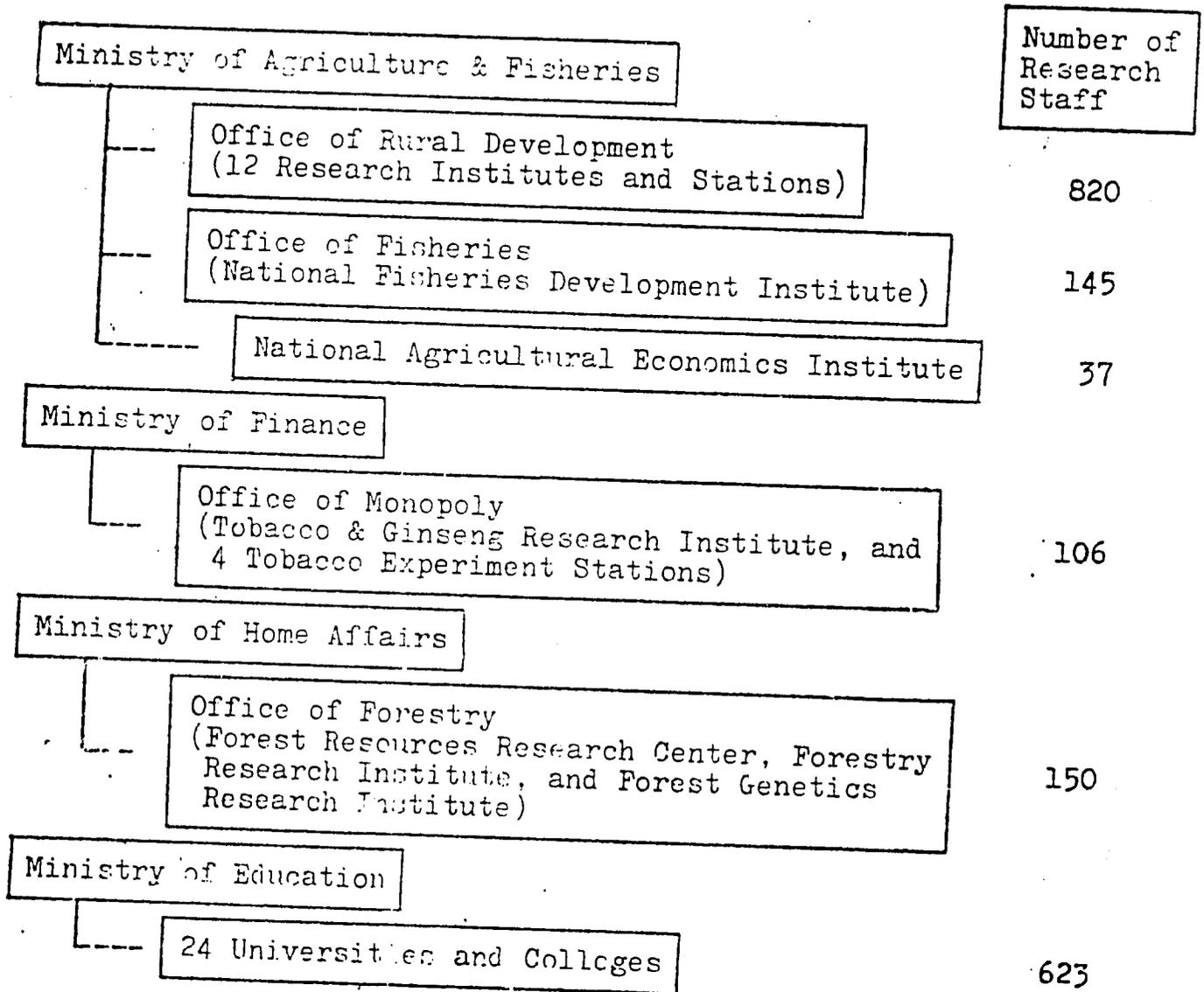


Source: ORD, 1970, p. 4.

In addition to ORD's research network, agricultural research is conducted by the Ministry of Agriculture and Fisheries' Office of Fisheries, the Ministry of Finance's Office of Monopoly (tobacco and ginseng research), the Ministry of Home Affairs' Office of Forestry, and at universities under the Ministry of Education (See Figure 6.3).

The 1970-72 research expenditures of the various governmental and private organizations are in Tables 6.3 and 6.4.

Figure 6.3: Agricultural research organization in Korea



Source: Ham, p. 2.

Table 6.3: Public R & D Expenditures for Agriculture,
Forest and Fishery by Subject and Organization (Thous. won)

Subject	Organization	1970	1971	1972
	Total	3,954,921	4,909,197	5,700,406 ^{1/}
	Office of Rural Development	1,000,831	1,420,690	1,780,834
Crop	Crop Experiment Station	182,834	220,349	223,706
	Honam Crop Exp. Station	37,680	49,666	51,115
	Yungnam Crop Exp. Station	27,852	43,001	61,752
	Chezu Crop Exp. Station	37,509	41,319	47,096
	Alpine Exp. Station	61,710	73,353	85,847
	Radiation Res. Inst. in Agriculture	176,301	169,359	162,294
Horti- culture	Horticultural Exp. Station	104,671	135,271	128,551
Seri- culture	Sericultural Exp. Station	65,282	73,113	77,661
Live- stock	Livestock Exp. Station	132,823	148,741	157,480
	Veterinary Res. Lab.	138,803	128,147	151,450
Forest	Forest Exp. Station	338,404	374,065	402,296
	Inst. of Forest Genetics	88,459	128,900	135,199
Fishery	Nat. Fisheries Res. and Dev. Agency	339,404	374,065	402,296
	Fishery Inspection Office	95,761	108,084	120,409
Chemical	Inst. of Plant Environment	144,394	205,795	219,639
Manage- ment	Inst. of Agr. Management	36,426	63,865	87,201
Manu- factur- ing	Inst. of Agr. Eng. and Utilization	92,160	92,214	109,261
	Tec. Res. Inst. (Offl. of Nat. Tax Adm.)	52,659	53,227	52,360
	Central Res. Inst. (Office of Monopoly)	203,116	206,342	259,248
Inspection ^{2/}	Agr. Prod. Inspec- tion Office	447,132	605,636	783,009
	Seoul Silk Condi- tioning House	55,917	75,167	79,656
	Pusan Silk Condi- tioning House	47,470	61,273	63,460
	Nat. Inst. for Agr. Mat.	47,322	57,555	58,586

^{1/} Approximately 20 percent or 1.2 billion won expended on rural development.

^{2/} Should not be counted in research budget.

Note: In 1970, 313 won = \$1, in 1971, 373 won = \$1; in 1972, 399 won = \$1
Source: Ferris et al., 1972, pp. 303 - 304.

Table 6.4: Other R & D Expenditures for Agriculture,
Forestry & Fisheries Sector in Korea, 1970

Unit: One Thousand Won	
Classification	R & D Expenditures
Private Research Institutes	\$ 10,269
Universities and Colleges	31,039
Private Enterprises	<u>77,441</u>
Total	\$118,749

Note: In 1970, 313 won = \$1

Source: Ferris et al, 1972, p 305.

The College of Agriculture at Seoul National University (COA/SNU), which is located adjacent to the ORD Compound at Suwon, has conducted important research and played a major role in the formation of the multi-disciplinary rice research team which bred the IR667, or "Tongil" high-yielding rice variety, first released in 1970. This breeding program involved an exchange of scientists with IRRI (USAID, 1973).

South Korea's other 23 agricultural colleges have conducted little research:

With the exception of COA/SNU's activities mentioned above, the colleges of agriculture in Korea are viewed almost totally as training units for students, and their potential contribution to an agricultural research program is virtually untapped. Such colleges training students for research and guidance service (extension) at the B.S., M.S. and Ph.D. levels have proliferated in Korea and, with few exceptions, they lack properly trained faculty, adequate libraries and similar reference sources, not to mention research laboratories, facilities and equipment which are virtually non-existent. USAID, 1973, p. 4.

A 1971 Presidential Decree permits college professors to hold concurrent positions at ORD.

Despite the fact that most of South Korea's agricultural research is conducted under the ORD umbrella, there have been coordination problems, with different institutes and experiment stations each pursuing their own goals. For example, a 1973 USAID paper remarked:

"It is recognized by both Korean and foreign observers that the overall effort suffers from scatteration, duplication, and inadequately trained manpower, resulting in insufficient concentration on the country's top research priorities." (USAID, 1973, p. 4).

A UNDP/FAO Project has supported plant protection research; the UNDP also assisted in the nation-wide soil survey completed in the early seventies, and the West German government has supported pasture improvement research (USAID, 1973). The World Bank has not been involved in South Korea's agricultural research system, except peripherally through its Korean Seed

Project (World Bank, 1973).

The major donor involved in the development of the agricultural research system has been USAID. Links to external agencies, as of 1978, are summarized in Table 6.5.

6.2 USAID involvement.

U.S. involvement in South Korean agriculture dates from 1947, when the U.S. Military Government promulgated the "Agricultural Technical Education Law," creating an extension service (Rohlfis, 1969). Following the 1956 report of Dr. Harold Macy, Dean of the University of Minnesota's Institute of Agriculture, agricultural extension and research were delegated to the Institute of Agriculture, founded in 1957, which combined a total of 29 organizations under one agency. The Institute was supported by the ICA, USAID's predecessor agency, and research facilities which had been damaged in the war were rebuilt. ORD succeeded the Institute in 1962 (Kim, 1971).

Table 6.6 presents a summary of relevant ICA and USAID projects.

The activities of U.S. personnel are described in end-of-tour reports now located at AID's Reference Center, the most important of which are listed in the bibliography. Rehabilitation of COA/SNU, which was virtually destroyed during the Korean War, was undertaken via a University of Minnesota contract from 1957-61 (Rohlfis, 1969). The recent SNU Project (489-0709), which involved an exchange of professors with U.S. universities, like the earlier SNU loans, was not restricted to SNU's College of Agriculture.

In 1972, USAID financed an extensive review of South Korea's agricultural sector, performed by Michigan State University. The study identified inadequate biological technology as the main constraint to South Korea's agricultural development. This recommendations formed the basis for USAID's subsequent Agricultural Research Project.

Tab 6.5: Status of Cooperative Activities with International Research Organizations, 1978

Item Organization	Foreign fund support (\$1,000)	Invit. of con- sultants (Pers.)	Overseas train- ing (Pers.)	Proc. of equip. (type)	Joint res. activities (No.)
AID	5,000 (Loan)	36	101	938	27
Korean-Japanese	1,746	4	48	180	80
Korean-U.K. (Farm mach. trang.)	697	18	2	220	4
Korean-U.K. (Farm equip. res.)	286	3	-	-	4
Korean-U.K. (Methane gas dev.)	53	1	-	5	5
Korean-U.K. (Livestock dev. in Jeju)	251	2	2	3	-
Korean-German	2,000	24	28	291	6
IRRI (Farm mach. res.)	18.8	-	-	12	4
IRRI (Rice res.)	-	10-yr period	46	-	2
INTSOY	-	4-yr period	7	-	2
CIP	230	2	4	-	1
AVRDC	130	1	7	1	7
CIMMYT	-	2-yr period	10	-	2

 Source: Desrosiers et al, 1978, p. 13.

Table 6.6: ICA/USAID Projects Related to Agricultural Research

<u>Project No.</u>	<u>Title</u>	<u>Years</u>	<u>Obligation (\$ Thous.)</u>
489-0209	Agric. Resources Improvement	1956-62	398
489-0215	Crop Improvement	1956-62	651
489-0258	SNU Tech. Asst.	1956-60	1,050
489-0259	SNU Op. Facilities	1956-67	3,470
489-0500	Rodent Pest Control	1959-62	140
489-0512	Higher Education	1959-67	1,544
489-0529	Agric. Res. + Tech. Impr.	1961-63	146
489-0558	Agric. Ext., Res. + Tech.	1962-66	519
489-0705	Ag. Research Project	1974-80	5,000
489-0709	SNU Program	1975-80	5,000

Source: PAISHIST listing, AID/DS/DIU.

The agricultural research project, No. 489-0709 (sometimes termed the "Crop Improvement Research Project"), provided a \$5 million loan from 1975-1980. (It was USAID's largest agricultural research project in South Korea, and also its last; the Korean Aid Mission closed this summer since the country is considered to have "graduated" from a need for aid on concessional terms). The project's emphasis was upon basic food crops -- rice, soybeans, barley, wheat and potatoes -- and on cropping systems research, and involved the creation of multi-disciplinary research teams including 11 long-term and 6 short-term expatriate advisors. (The number of long term staff was later reduced to 8). The project also provided for training of Korean researchers in the U.S., and at IRRI and CIMMYT. (USAID, 1973).

The Interdisciplinary Research Teams (ID Teams) were established under a new ORD unit, the Crop Improvement Research Center (CIRC). The research budgets, by commodity, are presented in Table 6.7. A 1978 evaluation of the project, and the proceedings of the project steering committee, provide further details (Desrosiers et al., 1978; CIRC/ORD, 1979). The former directors of the project, Omer Kelley and Y.K. Choi, are now both in Washington, with the Office of Technology Assessment and the World Bank, respectively. In telephone interviews they made the following points: 1) the rice program was fully implemented; 2) the programs for soybeans, potatoes and other crops were not fully implemented but are "well underway" and 3) research in the livestock sector remains very weak.

Table 6.7: Research budgets, by commodity under AID Project No. 489-0705.

Unit: 1,000 won

	'74		'75		'76		'77		'78		Total	
	Subject	Budget										
Rice	3	13,680	20	18,301	15	17,833	12	19,550	9	10,800	59	80,164
Wheat/Barley	1	15,801	18	20,200	28	20,268	10	10,195	5	9,700	62	76,164
Soybeans	3	3,249	9	9,295	27	18,265	14	12,134	8	6,600	61	49,543
Potatoes	2	4,641	9	10,832	16	13,071	12	6,982	12	8,700	51	44,226
Cropping Systems	15	10,863	13	11,375	19	28,405	15	20,653	18	22,200	80	93,496
Total	24	48,234	69	70,003	105	97,842	63	69,514	52	58,000	313	343,593

Note: 484 won = U.S. \$1

Source: Desrosiers et al., 1978, p. 22

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CHAPTER 7. AGRICULTURAL RESEARCH IN INDIA

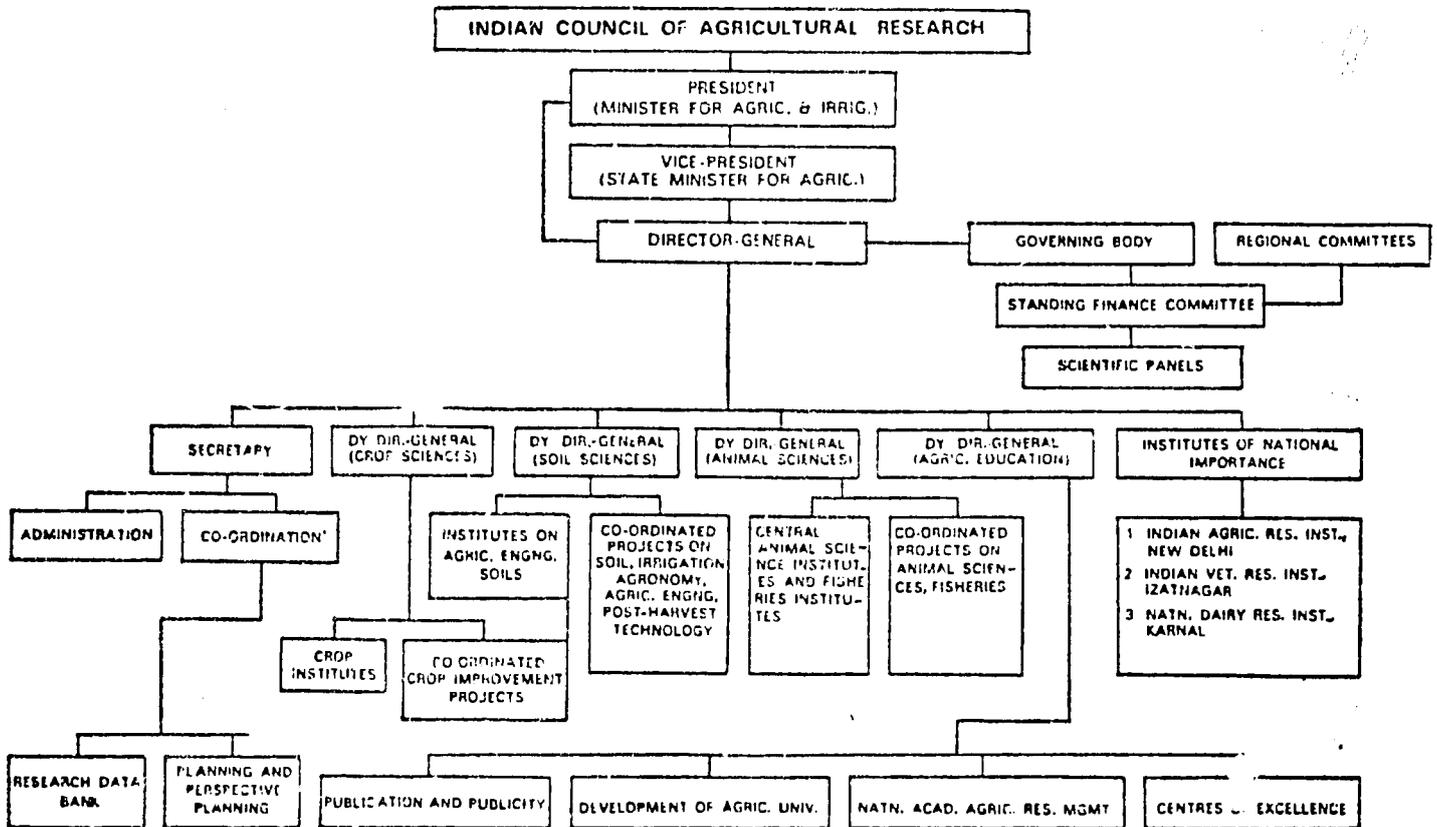
7.1 Overview

India has a large, well developed agricultural research system with a long history. Time constraints prevent a full treatment of it here; this chapter is intended as a guide to some of the relevant literature.

The history of India's agricultural research system is sketched in a case study by Ruttan (1980), reproduced as Appendix D.1 of this report. A quantitative account for the period 1950-68, providing expenditure breakdowns by state and measures of commodity orientation, is provided in an article by Mohan, Jha and Evenson (1973), reproduced as Appendix D.2 of this report. Agricultural research investment in India is still growing; the sixth five-year plan projects an expenditure of Rs. 4.25 billion (\$540 million), up from Rs 2.1 billion under the previous five-year plan (USAID, 1978). ✓

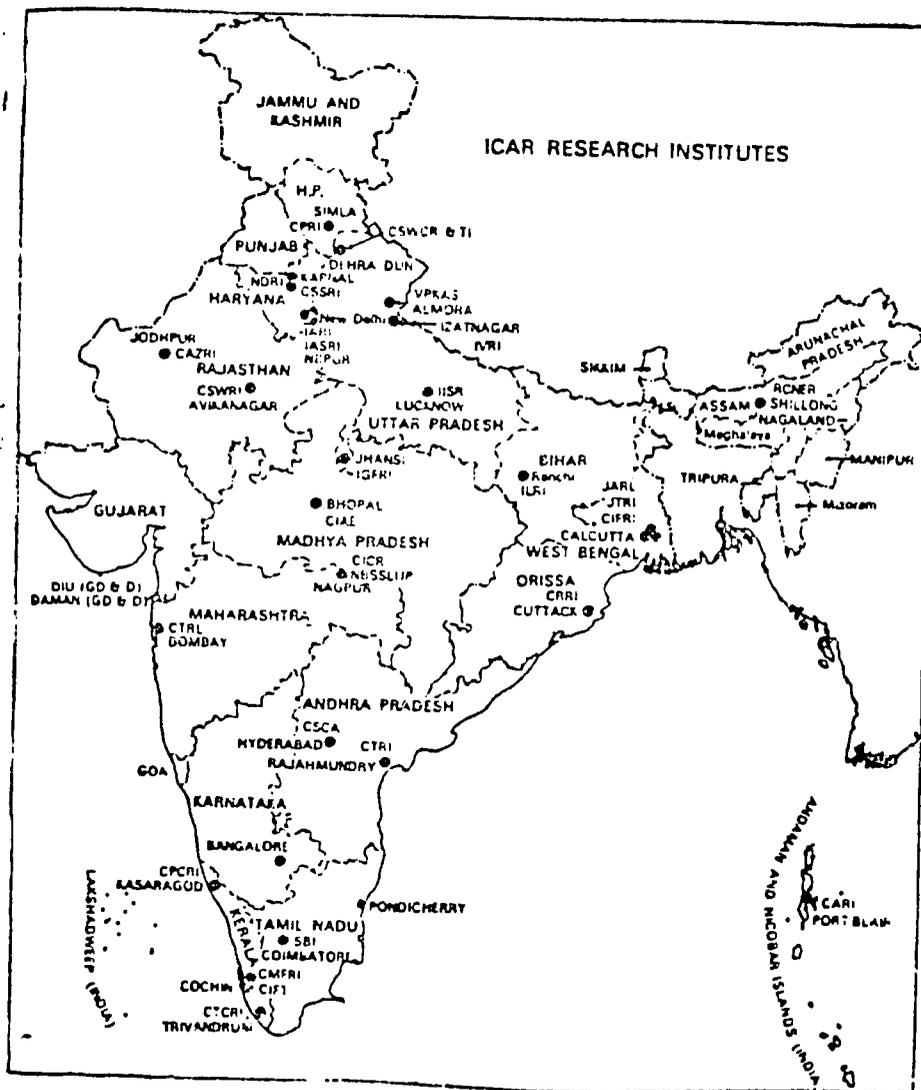
The Indian Constitution delegates responsibility for agriculture to the states. Within the states research is conducted primarily by the State Agricultural Universities, although some research is also carried out under the State Departments of Agriculture. Central government research institutions are under the jurisdiction of the Indian Council of Agricultural Research, ICAR, the organization of which is shown in Figure 7.1. The locations of the various ICAR research institutes are shown in Figure 7.2, and Figure 7.3 shows the locations of India's agricultural universities.

Figure 7.1: Organization of the ICAR



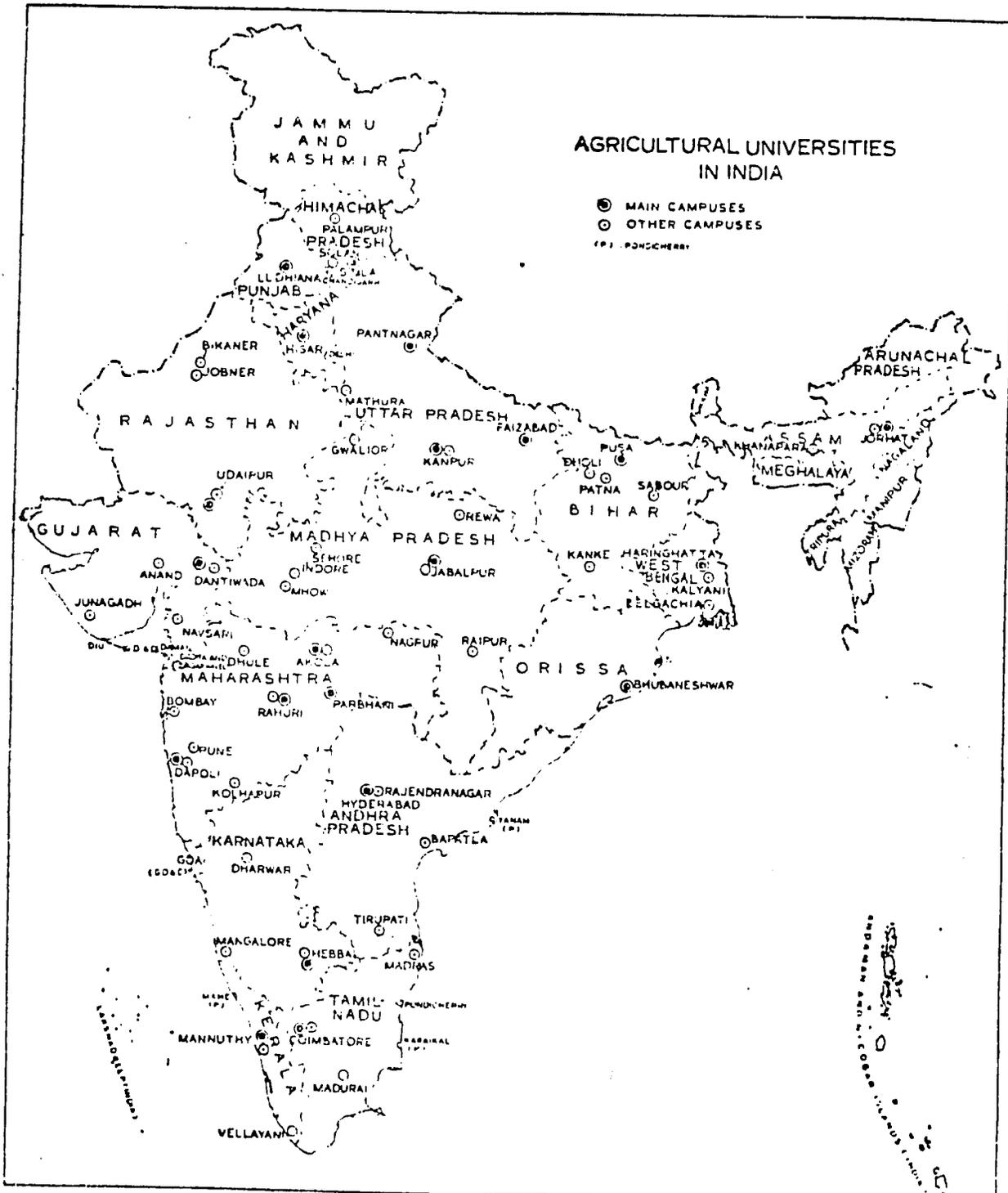
Source: Randhawa, 1979, p. 86

Figure 7.2: Location of ICAR Research Institutes



Source: Randhawa, 1979, p. 93.

Figure 7.3: Location of Indian Agricultural Universities



Based upon Survey of India map with the permission of the Surveyor General of India. © Government of India copyright 1978. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line. The boundary of Meghalaya shown in this map is as interpreted from the North-Eastern Areas (Re-organization) Act, 1971, but has yet to be verified.

Source: ICAR, 1978.

In the 1950's and 1960's, USAID played an active role in the development of India's agricultural research system. Table 7.1 lists relevant ICA/USAID projects. Political tensions led to a winding down of USAID activity in India in the early '70's.

Table 7.1: USAID Projects Relating to Agricultural Research in India

<u>Project Number</u>	<u>Title</u>	<u>Years</u>	<u>Obligation (\$Thous.)</u>
386-0010	Forest Res.	1952-62	545
386-0028	Agricultural Univ. Dev.	1954-65	8,981
386-0061	Crop Production	1955-69	1,536
386-0082	Irrigation Research	1956-59	92
386-0147	Utlar Pradesh Agr. Univ.	1958-65	343
386-0281	Ag. Univ. Dev. - Mysore	1963-72	2,397
386-0281	Ag. Univ. Dev. - Andra Pradesh	1963-72	2,636
386-0281	Ag. Univ. Dev. - Punjab	1963-73	2,160
386-0281	Ag. Univ. Dev. - Rajasthan	1963-72	2,000
386-0281	Ag. Univ. Dev. - Maharashtra	1967-73	949
386-0281	Ag. Univ. Dev.	1963-77	9,895
386-0379	Rice Res. Improvment	1967-73	578

Source: FAISHIST listing, USAID/DS/DIU.

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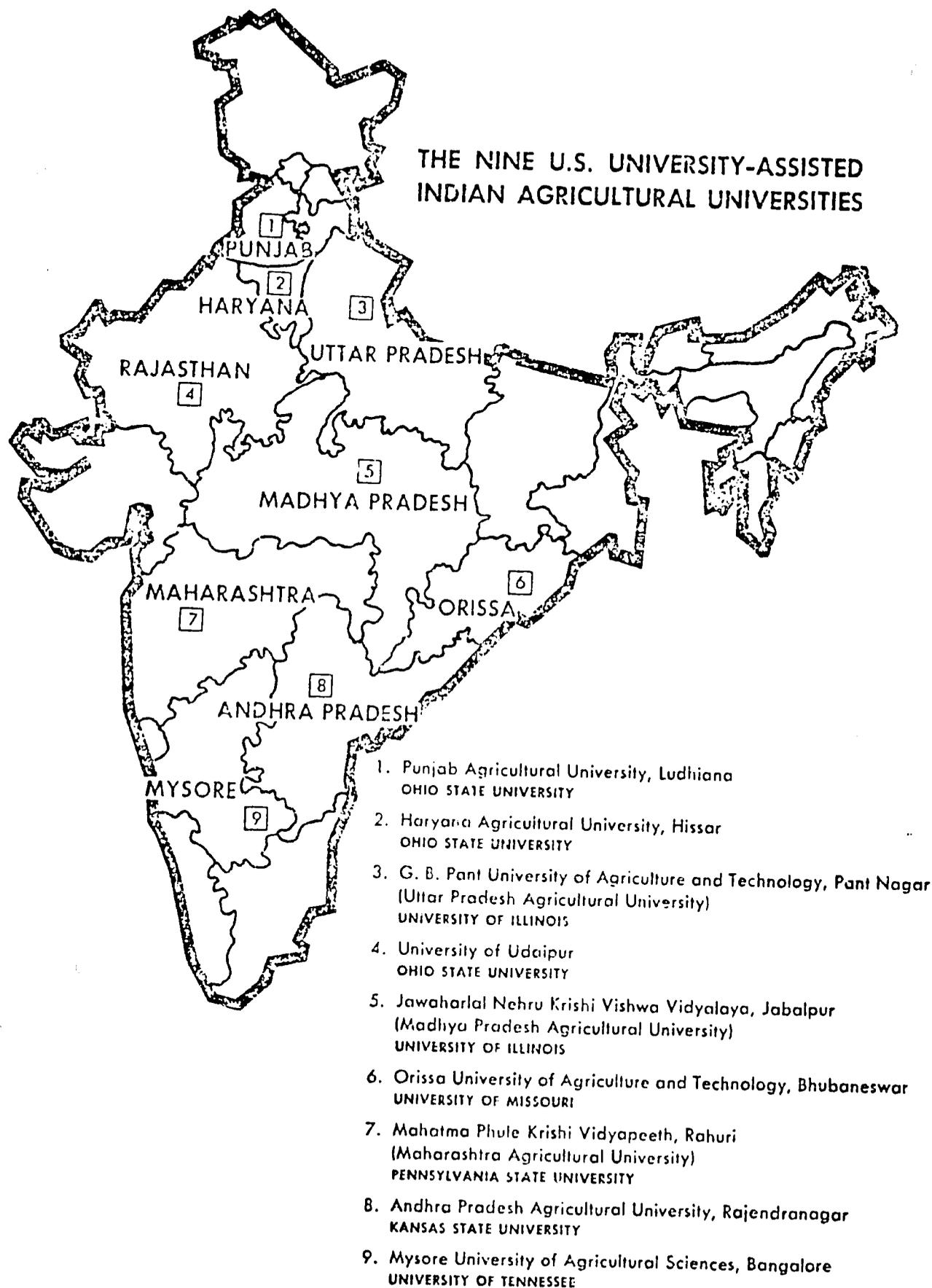
The major U.S. involvement was with nine agricultural universities, which were modeled after the U.S. Land Grant System. Six U.S. universities provided assistance under USAID contract. The locations and affiliations are shown in Figure 7.4. Read (1974) provides the official history of the university-building projects.

The Rockefeller and Ford Foundations also played major roles in the development of what was once popularly termed India's "Green Revolution". Streeter (1969) is the official history of the Rockefeller Foundation's involvement.

In recent years the World Bank has initiated a number of agricultural extension projects, some of which contain a significant research component, in various Indian States. As of September 1978 the bank had approved six such projects--in Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan and West Bengal--and four more had been proposed. The Bank's new National Agricultural Research Project (NARP), appraised in the same month, will provide \$27 million to strengthen research at the State Agricultural Universities, in close association with the ICAR. The project will emphasize research on foodgrains (cereals and pulses) and oilseeds, adapted to particular agro-ecological zones, and will devote special attention to rainfed agriculture and to the integration of cropping patterns with animal husbandry (World Bank, 1978). The establishment of ICRISAT in Hyderabad has also strengthened research on rainfed agriculture.

A \$20 million USAID grant has been proposed to fund basic (as opposed to applied) research under the ICAR (USAID, 1978).

Figure 7.4:



Source: Read, 1974.

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CHAPTER 8. IMPACT OF AGRICULTURAL RESEARCH

8.1 Productivity Effects

Beginning with Grilliches' famous study of U.S. hybrid corn research in 1958, a considerable body of literature has emerged on the subject of returns to investment in agricultural research. A number of these studies are summarized in Table 8.1. The general picture emerging from these studies is one of exceptionally high rates of return.

The productivity effects of agricultural research investments do not only flow to the economy supporting the research. Under the right conditions, research results achieved in one country can be appropriated by other countries. Such "borrowing" is however not automatic; as Evenson and Kislev (1975) explain, it depends on two crucial factors: "(1) the availability of "borrowable" knowledge, of knowledge embodying the appropriate geoclimatic specificity; and (2) on the existence of an active indigenous research system, without which no knowledge is borrowed..." (p. 160). This analysis underscores the importance of national agricultural research systems.

Of the countries examined in this report, only India and the Philippines appear to have been the subjects of data-based economic studies on the productivity of agricultural research investments. The first such study of India, by Evenson and Jha (1973), estimated the income streams generated by agricultural research investments within states, and the spillover effect from research investments in states within the same geo-climate region. The study concluded that "the major determinant of productivity change in Indian agriculture has been the Indian agricultural research system," and criticized the tendency to

Table 8.1

Summary of Selected Studies of Agricultural Research Productivity

Study	Country	Commodity	Time Period	Annual Internal Rate of Return (%)
<u>Sources of Growth Type Studies</u>				
Tang (1963)	Japan	Aggregate	1880-1938	35
Griliches (1964)	U.S.A.	Aggregate	1949-59	35-40
Latimer (1964)	U.S.A.	Aggregate	1949-59	Not significant
Peterson (1966)	U.S.A.	Poultry	1915-60	21
Evenson (1968)	U.S.A.	Aggregate	1949-59	47
Evenson (1969)	South Africa	Sugarcane	1945-58	40
Evenson (1969)	Australia	Sugarcane	1945-58	50
Evenson (1969)	India	Sugarcane	1945-58	60
Ardito Barletta (1970)	Mexico	Crops	1943-63	45-93
Evenson & Jha (1973)	India	Aggregate	1953-71	40
Kahlon, Saxena, Bal, & Jha (1975)	India	Aggregate	1960/61-1972/73	63
<u>Direct Cost-Benefit Type Studies</u>				
Griliches (1958)	U.S.A.	Hybrid corn	1940-55	35-40
Griliches (1958)	U.S.A.	Hybrid sorghum	1940-57	20
Peterson (1966)	U.S.A.	Poultry	1915-60	21-25
Evenson (1969)	South Africa	Sugarcane	1945-62	40
Ardito Barletta (1970)	Mexico	Wheat	1943-63	90
Ardito Barletta (1970)	Mexico	Maize	1943-63	35
Ayer (1970)	Brazil	Cotton	1924-67	77+
Schmitz & Seckler (1970)	U.S.A.	Tomato harvester: With no compensation to displaced workers	1958-69	37-46
		Assuming compensation of displaced workers for 50% of earnings loss		16-28
Hines (1972)	Peru	Maize	1954-67	35-40 ^{a/} 50-55 ^{b/}
Hayami & Akino (1975)	Japan	Rice	1915-50	25-27
Hayami & Akino (1975)	Japan	Rice	1930-61	73-75
Hertford, Ardila, Rocha, & Trujillo (1975)	Colombia	Rice	1957-72	60-82
	Colombia	Soybeans	1960-71	79-96
	Colombia	Wheat	1953-73	11-12
	Colombia	Cotton	1953-72	None
Peterson & Fitzharris (1975)	U.S.A.	Aggregate	1937-42 1947-52 1957-62	50 51 49

a/ Returns to maize research only.

b/ Returns to maize research plus cultivation "package".

Source: See following page.

Source: Reported in Resource Allocation and Productivity in National and International Agricultural Research, T. Arndt, D. Dalrymple, V. Ruttan eds., pp. 5-6. A compendium of papers presented at a conference on this topic held at Airlie House, Virginia, January 26-39, 1975. References to individual estimates are:

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neglect national research systems in favor of investment in the international centers.

A second study of India (Kahlon et al., 1977), using different estimation procedures, produced similar results. A one rupee investment in agricultural research gave a return of 11.61 rupees in additional agricultural output, with a five-year lag between investment and returns. This works out to an internal rate of return of 63.3% per annum.

A study of rice research in the Philippines by Flores, Evenson and Hayami (1978) ^{Philippines} estimated an internal rate of return of 27%. Noting the similarity to returns to rice research in Japan in the 1903-35 period, and the fact that rates of return subsequently increased as Japanese research was reorganized into a national-local coordinated system (as PCARR is now attempting to do in the Philippines), the authors anticipate that "the returns to investment in the Philippine system will continue to be high in the near future." (p. 607).

In addition to the above studies, much data is available on yield increases associated with the spread of high-yielding varieties. For example, Kim (1977) reports that the introduction of the "Tongil" variety in Korea resulted in an additional output of 159,000 metric tons of rice in South Korea in 1973, and 443,000 metric tons of extra output in 1976. Such figures do not however separate the impact of research from other factors, eg. increased fertilizer use.

Two recent World Bank Staff Working Papers, one by Schuh and Tollini (1979) and the other by Scobie (1979), review the "state of the art" in cost-benefit analysis of agricultural research investments. The latter paper includes an extensive (529-item) bibliography. A summation of U.S.

experience is provided in a recent paper by Evenson, Waggoner and Ruttan (1979).

8.2 Distributional Effects

More than a century ago, it was recognized that the distributional effects of technical change are determined primarily by the socio-economic context within which they occur:

It took both time and experience before the work people learned to distinguish between machinery and its employment by capital and to direct their attacks not against the material instruments of production but against the mode in which they are used. (Marx, 1867, cited by Gotsch, 1972.)

More recently, the crucial importance of the social and institutional environment in shaping the distributional impact of technical change in agriculture has been emphasized by many analysts, including Gotsch (1972), Bieri, de Janvry and Schmitz (1972), Griffin (1974) and Ruttan (1978).

As de Janvry (1977) and Ruttan (1978) observe, the supply of new technology, as well as the distribution of its benefits, is shaped by the social order:

The relative power of different economic and social groups over the politico-bureaucratic structure is the primary determinant in getting their specific demands eventually translated into a supply of new knowledge or new technology. (Ruttan, 1978).

This process is diagrammatically depicted in Figure 8.1.

A large body of literature exists concerning the distributional consequences of the "green revolution" in Asia. There is general agreement that, owing to differences in land distribution and in the power to command

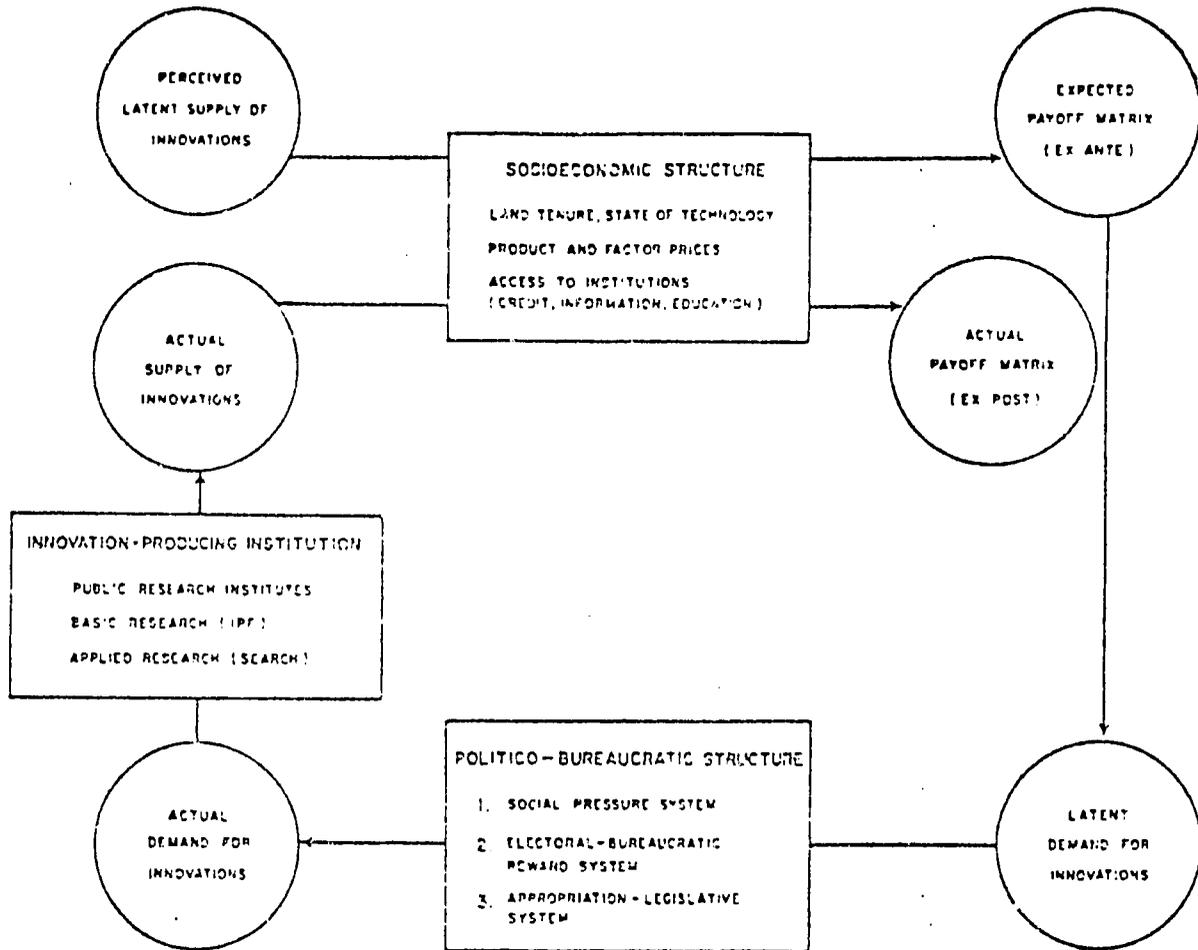
scarce (and often subsidized) resources, absolute income differences in rural areas have widened. There is less agreement as to the effects on relative income distribution. ✓

In the case of India, which has generated an especially large volume of literature, some argue that the benefits of agricultural growth have "trickled down" to even the poorest sectors of the rural population, i.e. ✓
although the gap between rich and poor has widened, the rural poor are still better off in absolute terms than they were before the introduction of high-yielding varieties, etc. (Ahluwalia, 1978). Others maintain that the living standards of the poor have in fact deteriorated, and that this deterioration is intimately linked to the growth process itself (Griffin and Ghose, 1979).

Similarly, in the case of rural Java several analysts, including Sajogyo (1977) and Palmer (1977), have argued that the absolute income of the rural poor has declined. A recent World Bank report, on the other hand, devotes considerable space to a critique of Sajogyo's study, and concludes that "The growth in average per capital consumption expenditure does appear to have been accompanied by a reduction both in the proportion and absolute numbers of the population below certain low levels of per capita consumption". (World Bank, 1979a, p. 85). A similar conclusion is reached by Arndt (1975).

The experiences of Indonesia, the Philippines, Bangladesh and India (Punjab, Uttar Pradesh, Bihar and Tamil Nadu) are reviewed in a volume published by the I.L.O. (1977), titled Poverty and Landlessness in Rural Asia. In each of these cases, except for Bangladeshi, the rural poor grew poorer even as per capita agricultural production rose. Bangladesh had the distinction of being the one country in which the rural rich grew

Figure 8.1: Supply and Demand for Technological and Institutional Innovations



Source: Ruttan (1978), adapted from de Janvry (1977).

richer even as per capita production declined.

In assessing the impact of agricultural research upon income distribution, four main issues emerge (Scobie, 1979):

- 1) distribution between producers and consumers
- 2) distribution among regions
- 3) distribution between landowners and laborers
- 4) distribution among classes of producers

The distribution of gains between producers and consumers depends, in the first instance, upon demand elasticities and upon whether the economy is open or closed (Scobie, 1979 and Ruttan, 1980), and secondly upon the "bargaining power" of each (Bieri, de Janvry and Schultz, 1972), which may be reflected in government intervention in foodgrain markets. To the extent that rising output is translated into lower food prices, income distribution tends to improve, since the poor devote a larger portion of their income to buying food than the rich. Flores, Evenson and Hayami (1978) apply a Marshallian model to estimate consumer surplus and producer gains from rice research in the Philippines.

Regional disparities have often been associated with the spread of new agricultural technology. In Indonesia, for example, the World Bank notes that agricultural policies since 1968 have generally favored "the Javanese rice producer rather than producers of other food crops or farmers in other regions of the country". (World Bank, 1979b, p. 67). This results not only from the nature of the new technology generated by the agricultural research system, but also from biases in fertilizer, credit and irrigation programs.

The distribution of gains between land and labor is a complex issue.

In general, high-yielding varieties in and of themselves tend to be labor absorptive (more grain to process, increased multiple cropping, etc.) and in some cases increased demand for labor has led to rising real wages and in-migration of laborers from other regions. Over time, however, landowners tend to respond by investing in labor-displacing machinery (eg. tractors, threshers), thus negating the earlier positive impact on wages. Population growth and the growth of non-agricultural employment also influence the net result.

The distribution of gains between large and small farmers has received perhaps the greatest attention, especially in Asia where the population tends to be mainly rural. The ostensible "scale neutrality" of the new technology has led many to argue that relative distribution will remain unaltered, after an initial lag in adoption rates between large and small farmers, even though absolute income differences widen as a result of initial inequalities in asset distribution (Scobie, 1979, p. 23). But as Gotsch (1972) remarks in a discussion of irrigation investments, understanding the ultimate effects of technical change also requires "an assessment of the second-round effects, i.e., the impact of the technology on the existing institutional and social structure." (p. 336). If the rural rich use their additional income to buy more land (and rising yields will give them an added incentive to do so), land distribution will worsen, and with it income distribution. The small farmers who sell out are seldom simply switching their capital into new assets; they generally sell in times of distress to finance consumption (or debt repayment). Moreover, land transactions are often subject to serious "market imperfections;" to the extent that land transfers involve an element of coercion, rising absolute income differences may hasten the concentration process. As Gotsch points

out, "Wealth is power, and one would expect that the beneficiaries of increased incomes would be strengthened in their conflict with other classes." (p. 336).

In general, it seems from an examination of project documents that relatively little serious attention is devoted to these thorny distributional issues notwithstanding the "new directions" in aid policy in the 1970s. One looks in vain for any explicit recognition of the fact that the donors, by virtue of their financial support, are a very significant element of the political and economic matrix which shapes the demand for and supply of new agricultural technology.

As a 1974 review of Bangladesh's agricultural research system notes, "Well-meaning biological...scientists tend not to think in terms of this dimension [socio-economic consequences], but about the possibilities of "maximum production", unless they are encouraged to do so by social scientists." (Hesser et al., 1974, p. 42).

Occasionally project papers express an awareness of the pervasive inequalities which characterize much of rural Asia. For example, the paper for USAID's agricultural research project in Bangladesh remarks that "small differences in the size of landholding may result in large differences in income and access to technology and modern inputs." After noting that the rural elite has become "the dominant force" in rural cooperatives, the paper comes to the rueful conclusion that "the rural elite, however, will remain crucial to the spread effect of the new technology." (USAID, 1975, pp. 35-36).

More often the distributional issue is glossed, eg.: "In effect, then, all of Sumatra's research will be directed toward the small and poor farmers because in reality all farmers of Sumatra are small and poor." (USAID, 1977b, p. 22). Sometimes distributional concerns are

dismissed outright:

There can probably be found those prophets of doom who will maintain that the use of the new HYVs, mechanical threshing machines, and batch driers exert an adverse social (and implied political) effect in that they destroy social traditions. Such is often the result of a new technology, and those concerned must weigh self-sufficiency in food production against the preservation of traditional methods and values and consequent low production levels.

(USAID, 1977a, p. C-7)

Agricultural research cannot provide a remedy to deep-rooted social problems, but a sensitivity to distributional issues can affect the direction of the research effort. The choice of commodity emphasis can bias research benefits. Ruttan (1980) cites the example of Latin America, where beans are produced on small farms and beef on large farms; the allocation of research resources between beans and beef will have clear distributional implications. Similar choices can be made in terms of rainfed vs. irrigated agriculture, since wealthier regions or individuals have often have best access to water resources, and in the choice between development of labor-saving vs. labor-absorbing technologies. However, no research effort, no matter how well attuned to the needs of the "small farmer", can substitute for the broader structural changes so often necessary to improve the well-being of the rural poor.

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Appendix A: A Note on Data Sources

Information for this study was obtained from three principal sources within USAID:

- 1) Asia Bureau, Offices of Technical Resources and Project Development (Roslyn)
- 2) Bureau of Development Support, Division of Development Information and Utilization (Roslyn)
- 3) AID Reference Center (Room 1656, New State Bldg.)

The Asia Bureau's Offices of Technical Resources (TR) and Project Development (PD) have project papers for all current projects, and files containing correspondence, cable traffic, reviews, and other relevant documentation for current and recent projects.

The Division of Development Information and Utilization (DIU), under the Bureau for Development Support (DS), maintains four computerized data systems. The RANDD (Research and Development) system was found to contain no useful information for the purposes of this review. The PBAR system provides minimal information on current projects. The TEXT system provides summaries of USAID projects operational since 1974, and the BREF system summarizes project documents (ie. evaluations and audits) relating to the PBAR projects. The information contained in the latter two data banks is reproduced as Appendix B of this report. Although lacking in detail, this information provides a guide to some of USAID's existing documentation. DIU also keeps copies of all the Project Evaluation Summaries (PES) listed in DREF, some of which are not in the Asia/TR files.

The DIU's library in Roslyn also has a copy of PAISHIST, a listing of all ICA/USAID projects. Unfortunately, the computerized data systems

contain no information on the earlier (pre-1974) projects which can be identified from the PAISHIST listing.

The AID Reference Center's collection includes some documents from the 1950s and 1960s, but the collection is spotty.

Additional documents have been "retired" to the federal records storage center in Suitland, Maryland. Documents can be retrieved, provided they have not been destroyed, through Arnold Dadian at AID's Office of Public Affairs (telephone 202-632-9614). Requests should specify project titles and numbers; document retrieval takes one to two weeks. Because of time constraints, documents could not be located and retrieved from Suitland for this paper.

Data was also collected in visits to the World Bank and IFPRI. Papers presented at the 1977 Bellagio Conference were obtained from IADS in New York. The Rockefeller Foundation supplied relevant publications, while the Ford Foundation referred requests for information to its country offices. Various publications were also obtained from the Yale Library, and from the private collections of Robert Evenson at Yale and Dana Dalrymple at USAID.

Appendix B.1:

**Indonesia: Project Design Information and Evaluation Documentation
from AID/DS/DIU Data Systems**

 * COUNTRY/BUREAU: INDONESIA PROJECT: 4970190 SUB-PROJECT: 00 *
 * TITLE: HIGHER AGRICULTURE EDUCATION INITIAL FY: 70 FINAL FY: 76 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 7,390 *

PROBLEM: HOME-GROWN TOP-QUALITY SPECIALIZED MANPOWER IS REQUIRED IF INDONESIA'S AGRICULTURAL SECTOR IS TO GROW AND PROSPER. TRAINED MANPOWER SHORTAGE PARTICULARLY ACUTE IN AGRICULTURE.

STRATEGY: PROVIDE ASSISTANCE FOR THE DEVELOPMENT OF A SYSTEM OF HIGHER EDUCATION INSTITUTIONS WITH UNIQUE CAPABILITIES TO SERVE AGRICULTURE.

SUMMARY: 2 "CENTERS OF EXCELLENCE," INSTITUT PERTANIAN BOGOR AND GADJAH MADA UNIV ARE BEING HELPED TO DEVELOP GRADUATE TEACHING AND RESEARCH TRAINING PROGRAMS. THROUGH THESE UNIVS THE MORE HIGHLY SPECIALIZED MANPOWER REQUIRED WILL BE PRODUCED. MIDDLE MANAGEMENT TALENT WILL BE DEVELOPED BY LOCAL UNIVS AIDED BY THE SENIOR UNIVS THROUGH THE PEMBINA SYSTEM. THE INDONESIAN HIGHER EDUC KONSORSIUM FOR THE AGR SCIENCES IS THE AGENCY WHICH COORDINATES THE JOINT DEVELOPMENT PLANNING THAT INCLUDES THE 2 CENTERS OF EXCELLENCE AND 22 UNIVS. USAID ASSISTANCE IS PROVIDED THROUGH A CONTRACT WITH THE MIDWEST UNIVS CONSORTIUM FOR INTL ACTIVITIES (MUCIA) WHICH INCLUDES UNIVS OF ILLINOIS, INDIANA, MICHIGAN STATE, MINNESOTA, WISCONSIN.

GOAL: AN ESTABLISHED INDONESIAN CAPABILITY FOR UNDERTAKING AND MAINTAINING NATIONAL AGRICULTURAL DEVELOPMENT (PRODUCTION, EMPLOYMENT, & INCOME) THROUGH MORE EFFECTIVE UTILIZATION OF INDIGENOUS HUMAN RESOURCES.

PURPOSE: A SYSTEM OF MODERN AGRICULTURAL UNIVERSITIES WITH AN INSTITUTIONAL CAPACITY FOR PRODUCING TRAINED MANPOWER, AND WITH SPECIFIC EMPHASIS ON PROGRAMS OF COMMUNITY SERVICE, APPLIED RESEARCH, UNDERGRADUATE EDUCATION, GRADUATE INSTRUCTION AND UNIVERSITY ADMINISTRATION.

OUTPUTS: 1-ADVANCED GRADUATE TEACHING PROGRAMS.
 2-HIGH PRIORITY RESEARCH PROGRAMS.
 3-HIGHLY TRAINED STAFF MEMBERS.
 4-MODERN UNIVERSITY ORGANIZATION AND MANAGEMENT PRACTICES.
 5-THE INDONESIAN HIGHER EDUCATION KONSORSIUM.
 6-MODERN, INDIGENOUS UNDERGRADUATE COURSES IN AGRICULTURE
 IN THE NON-PEMBINA UNIVS.

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 * COUNTRY/BUPEAU: INDONESIA PROJECT: 4970198 SUB-PROJECT: 00 *
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 * TITLE: INDONESIA-AGRICULTURAL RESEARCH INITIAL FY: 73 FINAL FY: 81 *
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 * ESTIMATED AMOUNT AUTHORIZED(\$000): 3,273 *
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PROBLEM: INDONESIA LACKS RESEARCH EXPERTISE AND TECHNOLOGY TO MEET AGRICULTURAL MARKET DEMAND. LOW FOOD PRODUCTION HAS CAUSED FOOD PRICES TO RISE.

STRATEGY: DEVELOP NATIONAL RICE RESEARCH PROGRAM (NRRP) IN COLLABORATION WITH INDONESIAN RESEARCH INSTITUTIONS TO APPLY RESEARCH TO THE DEVELOPMENT OF RESEARCH STRATEGIES AND IMPROVED AGRICULTURAL TECHNOLOGY.

SUMMARY: NRRP COORDINATES INSTITUTIONAL PLANNING AND IMPLEMENTATION OF A FOOD-COMMODITY APPROACH EMPHASISING HIGH-YIELD, DISEASE-RESISTANT VARIETIES TOLERANT TO VARYING WEATHER CONDITIONS, STUDIES IN CULTIVATION, SPACING, WEED CONTROL, AND WATER MGMT AIMED AT FARMERS WANTING HIGH RETURN RATES AND AT FARMERS WANTING HIGH CERTAINTY RETURN, LABOR-INTENSIVE METHODS USED. FY74/75 IS TRANSITION PERIOD FOR NRRP ORGANIZATIONAL RESTRUCTURING, PARTICIPANT TRAINING IN ADVANCED ACADEMIC AREAS SUCH AS AGRICULTURAL EDUCATION, ENTOMOLOGY, PLANT BREEDING, ECONOMICS, AGRONOMY, PROJECT PAPER REVISION OF 3/14/77 EXTENDS PROJECT FOR 3 YEARS, WITH ADDED FUNDING OF \$922,550, PURPOSE OF EXTENSION IS TO CONTINUE THE TECHNICAL ASSISTANCE OF THE INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI) TO THE CENTRAL RESEARCH INSTITUTE FOR AGRICULTURE (CRIA) SO THAT CRIA CAN CONTINUE HIGH PRIORITY RESEARCH ON RICE AND SECONDARY CROPS AT THE NATIONAL CENTER AND ALSO CONTINUE AND EXTEND ITS RESEARCH STATIONS AT THE REGIONAL LEVEL. HIGH PRIORITY RESEARCH WILL BE CONTINUED IN IRRIGATED AGRICULTURE, IN THE AREAS OF RICE BREEDING AND IRRIGATION PATTERNS; SEQUENTIAL CROPPING; PEST CONTROL; CULTURAL PRACTICES; IMPROVED VARIETIES; AND FERTILIZERS. RESEARCH WILL ALSO BE CONTINUED IN UPLAND, RAINFED AGRICULTURE, WITH EMPHASIS ON SOIL CLASSIFICATION; REGIONAL CLIMACTIC PATTERNS; SYSTEMS OF LAND USE AND CULTURAL PRACTICES; INTERCROPPING; AND MARKER POTENTIALS, FOR BOTH TYPES OF FARMING SYSTEMS, RESEARCH WILL BE CONTINUED IN LOW-COST, HIGH-YIELD SECONDARY CROPS, CRIA'S NEWLY-FORMED OFFICE OF INFORMATION SERVICES WILL BE ASSISTED IN DISSEMINATING RESEARCH INFORMATION IN ORDER TO FREE SENIOR CRIA SCIENTISTS FOR RESEARCH WORK, IN ADDITION, CRIA STAFF WILL BE GIVEN MS AND PHD TRAINING OVERSEAS, AND WORKSHOPS, SEMINARS, EXTENSION TRAINING, AND SPECIALIZED SHORT COURSES WILL ALSO BE MADE AVAILABLE. LINKAGES WILL BE DEVELOPED BETWEEN CRIA'S EXTENSION SERVICE AND OTHER IMPLEMENTING AGENCIES TO FACILITATE DISSEMINATION OF RESEARCH RESULTS AT THE FARM LEVEL AND TO GATHER FEEDBACK FROM FARMERS, EXTENSION ACTIVITIES WILL BE CARRIED OUT AT THE REGIONAL AND DISTRICT LEVELS, AS WELL AS IN SMALLER AREAS. EXISTING RESEARCH EQUIPMENT, ESPECIALLY AT CRIA'S REGIONAL RESEARCH STATIONS, WILL BE SUPPLEMENTED AND MODERNIZED.

GOAL: RESEARCH ON IMPROVEMENT OF FOOD PRODUCTION THROUGH RESEARCH AND NATIONWIDE DISSEMINATION OF RESULTS. PROVISION OF A TECHNICAL BASIS FOR EFFICIENT AND ECONOMICALLY ATTRACTIVE FOOD PRODUCTION PRACTICES FOR FARMERS RESETTLED ON OUTER ISLANDS.

PURPOSE: TO SUPPLEMENT LIMITED CRIA STAFF, TO DEVELOP RESEARCH ON RICE BREEDING, PEST CONTROL, CULTURAL PRACTICES, AND CROPPING SYSTEMS TO IMPROVE PRODUCTIVITY OF ARABLE LANDS FOR GROWING RICE AND APPROPRIATE SECONDARY CROPS, TO STRENGTHEN INDONESIAN RESEARCH ORGANIZATIONS AND SUPPORT TRAINING OF PROFESSIONALS AND SUB-PROFESSIONALS FOR THE CONDUCT OF SUSTAINED AND EFFECTIVE PROGRAMS OF FOOD PRODUCTION AND AGRICULTURAL DEVELOPMENT.

OUTPUTS: 1. IMPROVED PRODUCTION OF RICE AND RELATED SECONDARY FOOD CROPS RESULTING FROM BREEDING VARIETIES WITH INCREASED YIELDS, SHORTER GOWING PERIODS, PEST RESISTANCE, AND ACCEPTABLE FOOD QUALITY. 2. SEED MULTIPLICATIONS FACILITIES DEVELOPED AND OPERATING FOR DELIVERY TO THE EXTENSION SERVICE. 3. IMPROVED CROPPING PATTERNS DEVELOPED WHICH HAVE GREATER AGGREGATE YEARLY PRODUCTION AND HIGHER POTENTIAL NET RETURN PER HECTARE FOR FARMERS. 4. TECHNICIANS AND PROFESSIONALS TRAINED TO ADEQUATELY STAFF THE GOI PROGRAMS ON RICE AND FOOD CROPS. 5. EFFECTIVE LINKAGES ESTABLISHED WITH EXTENSION AND IMPLEMENTING AGENCIES FOR DISSEMINATION OF TECHNOLOGY TO FARMER PRODUCERS.

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 * COUNTRY/BUREAU: INDONESIA PROJECT: 4970260 SUB-PROJECT: 00 *
 * TITLE: AGRICULTURAL EDUC FOR DEVELOP INITIAL FY: 76 FINAL FY: 81 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 5,500 *

PROBLEM: INEFFICIENT SYSTEMS OF CROP PRODUCTION, ANIMAL HUSBANDRY AND FISHERIES HAVE RESULTED IN LOW INCOME AND FEW NEW OPPORTUNITIES FOR THE INDONESIAN RURAL FARMERS.

STRATEGY: LOAN TO FUND TECHNICAL ASSISTANCE AND PARTICIPANT TRAINING TO INDONESIAN AGRICULTURAL UNIVERSITIES TO UPGRADE THE FACULTY STAFF IN ORDER TO IMPROVE AGRICULTURAL EDUCATION, PUBLIC SERVICES AND AGRICULTURAL RESEARCH WITHIN THESE UNIVERSITIES.

SUMMARY: INDONESIA IS UPGRADING HIGHER AGRICULTURAL EDUCATION. 3 PHASE PROCESS IS ENVISAGED, WITH THIS LOAN FUNDING THE SECOND PHASE. PARTICIPATING UNIVS ARE AT 2 BASIC LEVELS OF DEVELOPMENT. FIRST LEVEL ARE PEMBINA (LEADER) UNIVS. DURING PHASE 2 STAFF DEVELOPMENT WILL CONTINUE THROUGH PARTICIPANT TRNG PROGRAMS AND CAPABILITIES OF DEVELOPING PUBLIC SRVC SUPPORT ACTIVITIES ON NATIONAL AND REGIONAL LEVELS, AND CONDUCTING APPLIED RSRCH REQUIRED TO SUPPORT PUBLIC SERVICES. TRNG WILL BE ACHIEVED. SECOND LEVEL ARE 6 NON-PEMBINA UNIVERSITIES. DURING PHASE 2 UNIV STAFF WILL BE TRAINED TO MS LEVEL AT PEMBINA UNIVS. THIS GROUP WILL DEVELOP PUBLIC SERVICES AT PROVINCE LEVEL, AND CONDUCT RESEARCH TO SUPPORT PUBLIC SERVICES & TEACHING PROGRAM.

GOAL: INDIGENOUS INDONESIAN INTEGRATED AGRICULTURAL CAPABILITY FOR UNDERTAKING AND MAINTAINING NATIONAL AGRICULTURAL DEVELOPMENT.

PURPOSE: ESTABLISH A NUCLEAR GROUP OF AGRICULTURAL UNIVERSITIES WITH THE CAPACITY TO PROVIDE HIGHLY-QUALIFIED AGRICULTURAL MANPOWER, RESEARCH, AND PUBLIC SERVICE ACTIVITIES APPROPRIATE TO INDONESIA'S NEEDS.

OUTPUTS: 1. 4-YEAR B.S. CURRICULUM INSTALLED IN 6 NONPEMBINA UNIVERSITIES; 2. INITIATION OF POST-GRAD PROGRAMS AT PEMBINA UNIVERSITIES; 3. RETURNED STUDENTS JOIN FACULTIES AT UNIVERSITIES IN NUCLEAR GROUP; 4. UNIV PROGRAMS OF RURAL SERVICES ESTABLISHED; 5. UNIV PROGRAMS OF APPLIED AGR RESEARCH ESTABLISHED; 6. PHYSICAL FACILITY DEVELOPMENT APPROPRIATE FOR PROGRAMS OF TEACHING, RESEARCH, AND SERVICES; 7. IMPLEMENTATION OF NATIONAL DEVELOPMENT PLAN FOR HIGHER AGR EDUC; 8. UNIV ADMINISTRATION SYSTEM DEVELOPMENT.

 * COUNTRY/BUREAU: INDONESIA PROJECT: 4970263 SUB-PROJECT: 00 *
 * TITLE: SUMATRA AGRICULTURAL RESEARCH INITIAL FY: 77 FINAL FY: 83 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 9,500 *

PROBLEM: INDONESIA SUFFERS FROM LOW FARM PRODUCTIVITY. THE NATIONAL AGRICULTURAL RESEARCH SYSTEM IS DISORGANIZED AND FRAGMENTED. THERE IS DUPLICATION OF WORK, OVERLAP OF OBJECTIVES, WASTE OF MANPOWER AND POOR EFFICIENCY. LEVEL OF STAFF TRAINING IS VERY LOW. ADMINISTRATION IS WEAK. UNLESS GOVERNMENT OF INDONESIA (GOI) RECEIVES MORE ASSISTANCE IN AGRICULTURAL RESEARCH, FARM PRODUCTIVITY WILL REMAIN TOO LOW WITH RESULTING LOW EMPLOYMENT AND LOW INCOMES.

STRATEGY: 5-YEAR PROJECT CONSISTING OF LOAN, GRANT AND TECHNICAL ASSISTANCE TO EXPAND & IMPROVE AGRICULTURAL RESEARCH ON FOOD CROPS, FOR INCREASED AGRICULTURAL PRODUCTION, INCREASED EMPLOYMENT AND INCOME. AID LOAN IS 41% OF ALL COSTS. AID GRANT IS 15% OF ALL COSTS. TOTAL AID ASSISTANCE IS 56% OF ALL COSTS. GOI ASSISTANCE IS 44%. AID PROVIDES TA THROUGH CONTRACTS, CONSTRUCT, FARM DEVEL, EQUIPMENT, MISC STATION DEVEL, INFLATION, CONTINGENCY. GOI: COST SHARING, LAND, STAFF FOR TRNG, UNIVERS

SUMMARY: LOAN, GRANT AND TECHNICAL ASSISTANCE (TA) TO GOVERNMENT OF INDONESIA (GOI) EXPANDS AND IMPROVES AGRICULTURAL RESEARCH ON FOOD CROPS. PROJECT PROVIDES NETWORK OF AGRICULTURAL RESEARCH STATIONS (FOOD CROPS) ON SUMATRA CONSISTING OF HEADQUARTERS AND 3 SUBSTATIONS LOCATED TO REPRESENT DIFFERENT SOIL AND CLIMATIC CONDITIONS. THROUGH THE AGRICULTURAL EXTENSION SERVICE, THIS RESEARCH WILL BE USED TO BENEFIT THE SMALL POOR FARMERS OF SUMATRA. GOI'S CENTRAL RESEARCH INSTITUTE FOR AGRICULTURE (CRIA) DIRECTS SHORT TERM TRAINING AND TA. PROJECT IS IN ACCORD WITH GOI 5-YEAR PLAN, CRIA'S LONG-RANGE STRATEGY FOR DEVELOPMENT OF FOOD CROP RESEARCH AND THE AID AGRICULTURAL DEVELOPMENT POLICY PAPER AND THE INDONESIA DEVELOPMENT ASSISTANCE PROGRAM. PROJECT ACTIVITIES INCLUDE: (1) COMPLETING PHYSICAL FACILITIES AND INSTALLING EQUIPMENT FOR SUMATRA AGRICULTURAL RESEARCH NETWORK. (2) OBTAINING ACADEMIC DEGREES AND ASSIGNMENTS AT RESEARCH STATIONS: 4 PHD'S FROM US, 3 PHD'S FROM UNIV OF PHILIPPINES, LOS BANOS (UPLB) AND 1 FROM AN INDONESIAN UNIVERSITY; 11 MSC FROM US, 22 FROM UPLB AND 31 FROM INDONESIAN UNIVERSITIES. (3) INCREASING OF BS DEGREE STAFF MEMBERS BY ABOUT 55% NUMBER OF HIGH SCHOOL GRADS BY 80% ON-JOB TRAINING AND SHOPT-TERM TRAINING GIVEN THEM. (4) UPGRADING GENERAL STAFF THROUGH SHORT-TERM OBSERVATION TRAINING TRIPS TO PHILIPPINES, MALAYSIA AND TAIWAN TO LEARN RESEARCH METHODS. SHORT-TERM TRNG AT INTERNATIONAL RESEARCH CENTERS. RESEARCH CONTINUES AT EXISTING STATIONS (BANDAR BUAT, SUKARAMI, RAMBUTAN, TAMANBOGO) AND BEGINS AT NEW STATIONS AS THEIR CONSTRUCTION IS COMPLETED AND NUCLEUS STAFF BECOMES AVAILABLE. COORDINATED PROJECTS INCLUDE AID'S LOAN (497-T-041), AGRICULTURE EDUCATION FOR DEVELOPMENT; IBRD LOAN 1267, NATIONAL FOOD CROPS EXTENSION PROJECT AND IBRD LOAN 1179, AGRICULTURAL RESEARCH AND EXTENSION PROJECT. THE 1179 PROJECT FINANCES AGR RESEARCH ON JAVA AND RUBBER RESEARCH ON SUMATRA. DUTCH GOVERNMENT ASSISTS ESTABLISHMENT OF RESEARCH STATION ON SOUTH SULAWESI.

GOAL: INCREASED AGRICULTURAL PRODUCTION. INCREASED RURAL EMPLOYMENT AND INCOME.

PURPOSE: EXPAND AND IMPROVE AGRICULTURAL RESEARCH ON FOOD CROPS TO ADDRESS AGRO-CLIMATIC FACTORS PECULIAR TO SUMATRA.

OUTPUTS: 1. PHYSICAL FACILITIES IN PLACE. 2. PROFESSIONAL STAFF TRAINED. 3. SUFFICIENT TECHNICAL STAFF HIRED AND TRAINED. 4. RESEARCH PERFORMED DURING IMPLEMENTATION PERIOD.

* COUNTRY/BUREAU: INDONESIA PROJECT: 4970265 SUB-PROJECT: 00 *
 * TITLE: AGRIC DEVEL PLANNING AND ADMINISTRATION INITIAL FY: 77 FINAL FY: 83 *
 ESTIMATED AMOUNT AUTHORIZED(\$000): 6,499 *

PROBLEM: WITHOUT GREATER INCREASES IN PRODUCTION, THE RICE DEFICIT IN INDONESIA WILL BE BETWEEN 3.5 & 5 MILLION M.T. PER YEAR BY 1985. A MAJOR DETERRENT TO AGRICULTURAL DEVELOPMENT IS THE DEPT OF AGRICULTURE'S WEAK PLANNING SYSTEM. INDIVIDUAL PROJECT PLANNING IS LARGELY SUBSTITUTING FOR OVERALL SECTOR PLANNING. THE TWO MAJOR WEAKNESSES IN AGRICULTURAL PLANNING ARE A) THE LACK OF ACADEMICALLY QUALIFIED PEOPLE (IN BOTH ECONOMICS & AGRICULTURAL SUBJECTS) AND B) INADEQUATE & UNRELIABLE INFORMATION & A POOR DATA GATHERING/STORAGE/RETRIEVAL SYSTEM.

STRATEGY: 5-YEAR PROJECT PROVIDES GRANT FOR CONTRACT TECHNICAL ASSISTANCE BY US UNIVERSITY AND A LOAN FOR A) LONG- & SHORT-TERM ACADEMIC TRAINING IN US, THIRD COUNTRY & HOST COUNTRY AND B) DATA PROCESSING EQUIPMENT, VEHICLES & OTHER COMMODITIES. PROJECT TO IMPROVE PLANNING CAPABILITY OF EXISTING AGRICULTURAL INSTITUTION. HOST COUNTRY PROVIDES PROJECT MANAGEMENT & MAINTENANCE. A NEW BUILDING, LOGISTICAL SUPPORT FOR IN-COUNTRY TRAINING. HOST COUNTRY WILL ALSO SUPPORT TECH ASST & TRAINING.

SUMMARY: LONG- AND SHORT-TERM ACADEMIC TRAINING AND TECHNICAL ASSISTANCE TO IMPROVE THE PLANNING CAPABILITY OF THE INDONESIAN DEPARTMENT OF AGRICULTURE (DOA). INITIAL EFFORTS WILL BE CONCENTRATED ON FARM COST AND RETURN STUDIES, FARM MANAGEMENT STUDIES (SOME USING SMALL LINEAR PROGRAMMING MODELS), PRICE STUDIES, MARKET ANALYSES, COST/BENEFIT & SOCIAL IMPACT ANALYSES OF ALTERNATIVE POLICIES AND PROGRAMS, AND REGIONAL PLANNING MODELS. DOA'S DATA MANAGEMENT SYSTEM WILL BE IMPROVED BY CENTRALIZING THE FUNCTION INTO ONE BUREAU, CONSTRUCTING A NEW DATA PROCESSING CENTER, INSTALLING A COMPUTER SYSTEM, DEVELOPING APPLICATION PROGRAMS, AND STAFF TRAINING. US UNIVERSITY CONTRACT ADVISORS WILL INCLUDE AN AGRICULTURAL SECTOR PLANNING SPECIALIST, A DATA PROCESSING/COMPUTER SPECIALIST, AND SHORT-TERM CONSULTANTS. ABOUT 15 PARTICIPANTS WILL RECEIVE GRADUATE TRAINING IN THE US, 15 IN THIRD COUNTRIES, AND 50 IN INDONESIAN INSTITUTIONS IN THE FIELDS OF ECONOMICS AND RELATED BEHAVIORAL SCIENCES, PUBLIC ADMINISTRATION AND MANAGEMENT SERVICES. 300 PERSONS WILL RECEIVE SHORT-TERM TRAINING IN INDONESIA IN AGRICULTURAL PLANNING & DEVELOPMENT THROUGH WORKSHOPS COORDINATED BY THE AGENCY FOR AGRICULTURAL EDUCATION, TRAINING & EXTENSION AND SEVERAL UNIVERSITIES. PROVINCIAL LEVEL PLANNERS WILL ALSO RECEIVE TRAINING. IMPROVED AGRICULTURAL PROGRAMS AND POLICIES WILL INCREASE INCOME & EMPLOYMENT FOR THE POOR MAJORITY OF FARMERS AND FOR ALL PEOPLE IN RURAL AREAS. DOA'S BUREAU OF PLANNING WILL MANAGE PROJECT. THEY WILL ALSO COORDINATE PLANNING & DATA GATHERING WHICH IS DISPERSED THROUGHOUT DOA AND PROVINCIAL PLANNING UNITS.

GOAL: INCREASE AGRICULTURAL PRODUCTION, RURAL INCOME, AND EMPLOYMENT OPPORTUNITIES. **PURPOSE:** UPGRADE THE PLANNING AND PROGRAMMING CAPABILITY OF THE DEPT OF AGRICULTURE.

OUTPUTS: 1. MORE EFFICIENT AND EFFECTIVE APPROACH TO AGRICULTURE PLANNING. 2. TRAINED PERSONNEL. 3. IMPROVED SYSTEM OF DATA COLLECTION. 4. COMPUTER-BASED INFORMATION CENTER.

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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUREAU: INDONESIA                                           PROJECT: 4970190
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* TITLE: AGRICULTURAL HIGHER EDUCATION                               INITIAL FY: 70   FINAL FY: 76
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: HIGHER AGRICULTURAL EDUCATION
 AUTHOR:

PUBLICATION DATE: 05/02/73
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019000

ABSTRACT: LOW SALARY SCALES, INADEQUATE EFFORTS TO ESTABLISH COOPERATION BETWEEN THE DEPTS OF AGRICULTURE AND EDUCATION, DELAYED ATTEMPTS TO DEVELOP THE PROVINCIAL INSTITUTIONS NECESSARY TO COMPLETE A NATL EDUCATION SYSTEM HAVE HINDERED THE DEVELOPMENT OF THE PROJECT'S POTENTIALITIES, AT GHU, THE BASIC QUESTION CONCERNING ROLE OF THE AGR COMPLEX REMAINS TO BE RESOLVED.

DOCUMENT TYPE: AUDIT REPORT
 TITLE: AUDIT REPORT: HIGHER AGRICULTURE EDUCATION
 AUTHOR:

PUBLICATION DATE: 08/28/73
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: AID/AREA AUDITOR GENERAL-SOUTH ASIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019000

ABSTRACT: SECOND INTERIM COMPREHENSIVE AUDIT OF INDONESIAN HIGHER AGRIC EDUC PROJ ADMINISTERED THROUGH INTERNATIONAL DVLP AGREEMENT (IDA) BETWEEN AID & THE MIDWEST UNIVERSITIES CONSORTIUM FOR INTERNATIONAL ACTIVITIES (MUCIA). PROJ STRENGTHENS EDUCATIONAL RESEARCH AND EXTENSION PROGRAMS OF INSTITUT PERTANIAN BOGOR (IPB) & UNIVERSITY OF GADJAH MADA (UGM) TO PROVIDE FEEDER SERVICES TO 22 LESSER ADVANCED AGRIC UNIVERSITIES. AUDIT REVIEWS PROJ IMPLEMENTATION & MGMT, CONTRACTOR PERFORMANCE, & COMPLIANCE WITH AID POLICY. AUDITORS REVIEWED CONTRACTOR RECORDS, CONSULTED USAID, GOI, MUCIA OFFICIALS, & VISITED BOTH IPB & UGM. PROJ THUS FAR HAS FOCUSED ON UPGRADING TEACHING FACULTY AT EXPENSE OF PUBLIC SERVICE & RESEARCH. AUDITORS FIND EVIDENCE THAT THIS DEFICIENCY RECOGNIZED AND CORRECTIVE STEPS BEING TAKEN. AUDITORS CONSIDER USAID INPUT AT MUCIA/GOI/AID ANNUAL REVIEW SESSION TO BE INSUFFICIENT; SUGGEST USAID CONDUCT PAR PRIOR TO YEARLY REVIEW TO SERVE AS BASIS FOR INPUT. MUCIA IS CHARGED TO PROVIDE CONTRACTOR EVALUATION REPORTS IN ACCORDANCE WITH MO 1423.9. AUDITORS NOTE ABSENCE OF UNIFORM COMMODITY CONTROL AS SPECIFIED IN SECTION 23B OF IDA. AUDIT REVEALED UNDELIVERED COMMODITIES, NON-UTILIZATION & UNDER-UTILIZATION OF COMMODITIES, EVIDENCE OF POOR PLANNING (US 60 CYCLE ELECTRICAL ITEMS MISORDERED), & LACK OF REPLACEMENT PARTS & ACCESSORIES. CORRECTIVE ACTION RECOMMENDED INCLUDING COMMOD CONTROL, DELIVERY FOLLOW-UP, MONITORING REPORTS FOR COMMOD UTILIZATION. RETURNED PARTS TRAINING FOUND TO BE UNDERUTILIZED; COORDINATION OF ALL DONOR PROGRAMS TO PROMOTE THEIR UTILIZATION RECOMMENDED. MUCIA IS CHARGED TO PLACE MORE EMPHASIS ON ASSIGNMENT OF SHORT-TERM PERSONNEL TO MEET SPECIFIC NEEDS OF A PARTICULAR UNIVERSITY. AUDITORS REGARD ABSENCE OF PLEDGED GOI FINANCIAL SUPPORT, PARTICULARLY AT UNDERDEVELOPED UGM SITE, AS GREATEST PROJECT CONSTRAINT. RECOMMENDATION THAT USAID REDUCE LEVEL OF UGM ASSISTANCE UNTIL GOI DEMONSTRATES ADEQUATE SUPPORT. IN ASSESSING IDA, AUDITORS SUGGEST MUTUAL DISCUSSION TO RESOLVE ALTERNATIVE VIEWS OF MUCIA, USAID, AID/W ROLES WITHIN IDA.

DOCUMENT TYPE: SPECIAL EVALUATION REPORT
TITLE: REPORT OF EVALUATION TEAM: AID-MUCIA-INDONESIAN
HIGHER AGRICULTURAL EDUCATION PROJECT
AUTHOR: RENNE, ROLAND R
TURK, KENNETH L

PUBLICATION DATE: 12/14/74
DIC REFERENCE CENTER NUMBER: ID630.711R414
ORGANIZATION:

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019000

ABSTRACT: IN THE JUDGEMENT OF THE EVALUATION TEAM, THE PROJECT IS ON TARGET IN ALMOST ALL OF ITS BASIC ASPECTS AND SUBSTANTIAL PROGRESS HAS BEEN MADE IN THE DEVELOPMENT OF ACADEMIC ACTIVITIES AND LEADERSHIP NEEDED TO INCREASE THE CAPABILITY OF INDONESIAN UNIVERSITIES TO FULFILL THEIR RESPONSIBILITIES IN TEACHING, RESEARCH, AND PUBLIC SERVICE. OF GREATEST SIGNIFICANCE ARE THE ACCOMPLISHMENTS IN STAFF DEVELOPMENT THROUGH PARTICIPANT TRAINING, IMPROVEMENT IN THE QUALITY OF UNDERGRADUATE INSTRUCTION AND THE DEVELOPMENT OF THE SIX-YEAR CURRICULUM, PLANS FOR IN-COURSE GRADUATE PROGRAMS, IMPROVEMENTS IN UNIVERSITY STRUCTURE AND ADMINISTRATION, IMPROVED GENERAL SERVICES AND LIBRARY ACQUISITIONS, AND STRENGTHENING OF THE PROVINCIAL AGRICULTURAL UNIVERSITIES. WHILE DEFINITE PROGRESS HAS BEEN MADE IN RESEARCH AND PUBLIC SERVICE, THE NECESSARY LINKAGES WITH THE MINISTRY OF AGRICULTURE AND OTHER INSTITUTIONS HAVE NOT YET BEEN FULLY REALIZED TO PROVIDE SUBSTANTIAL ACCOMPLISHMENTS WITH A DEFINITE IMPACT ON NATIONAL AGRICULTURAL DEVELOPMENT. THE EVALUATORS MADE NINE RECOMMENDATIONS INCLUDING: (1) THE AID/MUCIA (MIDWESTERN UNIVERSITIES CONSORTIUM IN INTERNATIONAL AFFAIRS) INDONESIA HIGHER AGRICULTURAL EDUCATION PROJECT SHOULD BE CONTINUED OR EXTENDED FOR IMPLEMENTATION IN PHASE IIL; AND (2) A GRADUAL SHIFT IN EMPHASIS SHOULD BE MADE TO GIVE HIGHER PRIORITIES TO APPLIED RESEARCH AND PUBLIC SERVICE TO MEET THE NEEDS OF INDONESIAN AGRICULTURE.

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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUREAU: INDONESIA      PROJECT: 49701980                                *
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* TITLE: AGRICULTURAL RESEARCH   INITIAL FY: 73   FINAL FY: 81                    *
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: INDONESIA-AGRICULTURE RESEARCH
 AUTHOR:

PUBLICATION DATE: 04/11/74
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019800

ABSTRACT: OVERALL COORDINATION OF RICE RESEARCH PROGRAM HAS NOT BEEN EFFECTIVE. RESULTS LESS THAN ANTICIPATED. DURING FY 75-76 PROJECT TO BE USED AS BRIDGE FOR CONTINUING RICE RESEARCH. IF NATIONAL PROGRAM DOES NOT MATERIALIZE. USAID PROJECT WILL TERMINATE EXCEPT PARTICIPANT COSTS. THE FIVE TRAINING CENTERS NEVER REALIZED.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: AGRICULTURAL RESEARCH
 AUTHOR:

PUBLICATION DATE: 11/18/76
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019800

ABSTRACT: CONTINUED FUNDS REQUESTED FOR RICE AND SECONDARY CROPS RESEARCH. CONTRACTOR PERFORMANCE TO DATE JUDGED OUTSTANDING; SUCCESSFUL HIGHLAND & UPLAND RICE VARIETIES RELEASED. GOI HAS BEGUN HANPOWER DEVELOPMENT PROGRAM TO ENSURE TECHNICALLY COMPETENT STAFF; OVERSEAS TRAINED STAFF CURRENTLY EMPLOYED. NATIONAL RICE RESEARCH PROGRAM STRENGTHED AND REORGANIZED.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: AGRICULTURAL RESEARCH
 AUTHOR: TAPPAN, WALTER C

PUBLICATION DATE: 01/08/78
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019800

ABSTRACT: 11/1/76 - 12/1/77. EXCELLENT PROGRESS WAS MADE IN STRENGTHENING RESEARCH PROGRAM AND IMPROVING STAFF QUALIFICATIONS. AGRICULTURAL PRODUCTIVITY WAS INCREASED THROUGH INTRODUCTION AND DEVELOPMENT OF NEW HIGH-YIELDING DISEASE RESISTANT RICE VARIETIES AND THE EVOLUTION OF RICE-BASED CROPPING SYSTEMS IN THE HIGHLANDS AND TRANS MIGRATION AREAS. CONTRACTOR, IRRI (INTERNATL RICE RESEARCH INSTITUTE) DEVELOPED GENETIC EVALUATION AND UTILIZATION (GEU) CONCEPT WHICH WAS ADOPTED BY RICE PROJECT LEADER IN 1975. VARIETAL IMPROVEMENT PROGRAM HAS MOVED TOWARD A FULLY INTEGRATED UNIT INVOLVING PATHOLOGISTS, ENTOMOLOGISTS, AGRONOMISTS, BREEDERS AND PHYSIOLOGISTS. CROPPING SYSTEM PROJECT ALSO USED MULTI-DISCIPLINARY APPROACH IN DESIGNING, TESTING AND IMPLEMENTING ADAPTED CROPPING PATTERNS FOR SELECTED AGRO-CLIMATIC ZONES. STAFF AT CENTRAL RESEARCH INSTITUTE FOR AGRICULTURE (CRAI) WAS UPGRADED. 13 PARTICIPANTS RETURNED WITH HIGHER DEGREES (SPHD, BMS) AND 21 ARE CURRENTLY AT UNIVERSITIES. 39 PARTICIPANTS RETURNED FROM SPECIALIZE SHORT-TERM TRNG CONDUCTED AT IRRI & IN THE PHILIPPINES. 10 ARE CURRENTLY IN TRNG. GOI GAVE HIGH PRIORITY TO THE PROJ AND INCREASED ITS BUDGETARY ALLOCATION TO CRAI. NEW OFFICE OF

INFORMATION A TRNG WAS ESTABLISHED IN CRAI. CRAI HELD A SUCCESSFUL RESEARCH SYMPOSIUM AT MARCOS RESEARCH STATION, SOUTH SULAWESI IN 9/77 ON RICE & SECONDARY FOOD CROPS. SERIOUS OUTBREAK OF NEW VIRUS (RAGGED STUNT) IN RICE OCCURRED IN 1977. CRAI SCIENTISTS IDENTIFIED CAUSAL ORGANISM WITH NEW ELECTRON MICROSCOPE.

PROJ WAS TO HAVE TERMINATED 2/77, BUT FOLLOWING STRONG REQUEST FROM GOI IT WAS EXTENDED 3 YRS. RECENTLY APPROVED AID SUMATRA AGRICULTURE PROJ WAS DEVELOPED BY CRAI & IRRI STAFF. CANADIAN GRANT ALSO ADMINISTERED BY IRRI PROVIDED FUNDING FOR DEVELOPMENT OF RICE BASED CROPPING SYSTS IN IRRIGATED LOWLANDS, RAINFED UPLAND, & TIDAL SWAMP AREAS. AGREEMENT WAS SIGNED BETWEEN AGENCY FOR AGRICULTURE RESEARCH & DEVEL (ARD) & INTNATL DEVEL SERVICE (IADS) (UNDER WORLD BANK FUNDING) TO SUPPORT RESEARCH ON PALAWIJA CROPS AT SUKAMANDI RESEARCH STATION. NOTES THAT PROJ WAS OUTSTANDING EXAMPLE OF MUTUAL UNDERSTANDING BETWEEN HOST-COUNTRY, CONTRACTOR & AID.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
TITLE: AGRICULTURAL RESEARCH
AUTHOR: KRASHEVSKI, STEFAN H

PUBLICATION DATE: 08/20/79
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497019800

ABSTRACT: EVALUATES THE INDONESIAN AGRICULTURAL RESEARCH PROJECT FROM 1/78 TO 12/78. PROJECT PURPOSE IS TO EXPAND THE CAPABILITY OF THE CENTRAL RESEARCH INSTITUTE OF AGRICULTURE (CRIA) TO PERFORM RESEARCH IN FOOD CROP PRODUCTION. EVALUATION IS BASED ON A JOINT REVIEW OF PROJECT RECORDS BY CRIA, THE INTERNATIONAL RICE RESEARCH INSTITUTE (PROJECT CONTRACTOR), AND USIAD. AFTER 5 YEARS OF RESEARCH, CRIC RELEASED 4 NEW RICE VARIETIES RESISTANT TOT HE BROWN PLANT HOPPER (BPH). OVER 1000 SITES WERE EVALUATED TO DELINEATE AREAS OF SEVERE BPH INFESTATION. BPH-RESISTANT VARIETIES WERE PLANNED IN THOSE AREAS THUS REDUCING RICE LOSSES TO A MINIMUM. IN 1978 ABOUT 1 MILLION HECTARES WERE PLANNED WITH BPH-RESISTANT RICE VARIETIES. BREEDING OF VARIETIES ADAPTABLE TO COLD OR TIDAL LAND REGIONS IS PROGRESSING SATISFACTORILY. CROPPING SYSTEMS RESEARCH WAS CONDUCTED IN 5 TARGET AREAS IN 1978. THE 2 ORIGINAL TARGET AREAS IN WEST JAVA AND CENTRAL LAMPUNG HAVE SERVED AS MODELS FOR MORE INTENSIVE CROPPING PATTERNS (AN EXTRA CROP PER YEAR) ON IRRIGATED AND PARTIALLY IRRIGATED RICE LANDS ON JAVA, AND FOR THE ESTABLISHMENT OF A PRODUCTIVE FOOD CROP ECONOMY IN THE UNDERDEVELOPED UPLAND AREAS TO SUMARTA AND KALIMANTAN. THE CROPPING PATTERNS MORE THAN DOUBLE THE FARMER'S INCOME EVEN THOUGH LABOR COSTS ALMOST DOUBLE AND AGRONOMIC INPUT COSTS INCREASE CONSIDERABLY. THE SUPPLY OF INPUTS WILL HAVE TO BE INCREASED TO SUSTAIN THE PRODUCTION INCREASES. THE COLLECTION AND EVALUATION OF BASELINE DATA AND DATA FOR MONITORING CROPPING SYSTEMS IN FARMER'S FIELDS HAVE BEEN IMPROVED AND STANDARDIZED. DATA SO FAR COLLECTED INDICATE THAT INDONESIA CAN ACHIEVE SELF-SUFFICIENCY IN RICE PRODUCTION ON IRRIGATED RICE LANDS ALONG IF APPROPRIATE CROPPING PATTERNS AND IRRIGATION PRACTICES ARE USED. OVERALL TRAINING IS ON SCHEDULE. PROJECT SUCCESS IS ATTRIBUTED TO THE MUTUAL COOPERATION BETWEEN GOI, IRRI, AND USAID. ONE LESSON LEARNED IS THAT A SUCCESSFUL PROJECT DEPENDS UPON THE WHOLEHEARTED INTEREST OF THE HOST COUNTRY AND THE JUDICIOUS SELECTION OF CONTRACT PERSONEEL. IRRI ANNUAL REPORT IS ATTACHED.

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*           EVALUATION DOCUMENTATION           *
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* COUNTRY/BUREAU: INDONESIA                     PROJECT: 4970260
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* TITLE: AGRICULTURE EDUC FOR DEVELOPMENT      INITIAL FY: 76   FINAL FY: 81
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE:
 AUTHOR:

PUBLICATION DATE:
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497026000

ABSTRACT: PAR REFLECTS CHANGE IN PROJECT NAME; SUGGESTS POSSIBILITY OF LOWERING PROJECT ADMINISTRATIVE COSTS; PROVIDES EVALUATIONS OF PARTICIPANT TRAINING, COMMODITY SUPPORT, & HOST GOVERNMENT SUPPORT. OVERALL PROJECT PROGRESS TO DATE SUMMARIZED. MUCH OF PAR ILLEGIBLE DUE TO POOR PHOTOCOPYING OF ORIGINAL.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: AGRICULTURAL EDUCATION FOR DEVELOPMENT
 AUTHOR: GREEN, CHARLES B

PUBLICATION DATE: 06/13/78
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497026000

ABSTRACT:

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: AGRICULTURAL EDUCATION FOR DEVELOPMENT
 AUTHOR: GREEN, CHARLES B

PUBLICATION DATE: 04/30/79
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDONESIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 497026000

ABSTRACT: EVALUATES THE AGRICULTURAL EDUCATION PROJECT IN INDONESIA FROM 6/78 TO 3/79. PROJECT PURPOSE IS TO DEVELOP AND STRENGTHEN AGRICULTURAL PROGRAMS AT 2 UNIVERSITIES. EVALUATION IS BASED ON PROGRESS REPORTS SUBMITTED BY THE UNIVERSITIES AT THE ANNUAL REVIEW MEETING. SUMMARIES OF THESE REPORTS ARE INCLUDED IN THE EVALUATION. ACTIVITIES HAVE PROGRESSED VERY WELL DESPITE THE RATHER DIFFICULT TRANSITION FROM GRANT TO LOAN FUNDING. THE MOST NOTICEABLE PROGRESS WAS IN STRENGTHENING THE GOI CONSORTIUM FOR AGRICULTURAL EDUCATION, THE GOI ENTITY RESPONSIBLE FOR MANAGING THE PROJECT. THE GOI HAS EXPANDED THE CONSORTIUM STAFF. THE HIGHLIGHT OF THE YEAR WAS A MEETING OF ALL THE AGRICULTURAL DEANS AT BOGOR IN 11/78. AT THIS MEETING THE 4-YEAR CURRICULA WERE APPROVED FOR IMPLEMENTATION AT THE SCHOOLS. GRADUATE PROGRAMS HAVE BEEN ESTABLISHED AT BOGOR AGRICULTURAL UNIVERSITY, PADJADJARAN UNIVERSITY, AND GADJAH MADA UNIVERSITY. EACH UNIVERSITY HAS A COMMUNITY SERVICE PROGRAM WHEREIN THE STUDENTS LIVE AND WORK 3 MONTHS IN A RURAL VILLAGE TO HELP SOLVE VILLAGE PROBLEMS. ABOUT 10% OF THE GRADUATES ENTER THE "BUTSI" PROGRAM, A PEACE-CORPS TYPE PROGRAM TO PROVIDE ASSISTANCE TO THE RURAL POOR. PARTICIPANT AND IN-COUNTRY TRAINING IS PROCEEDING AS PLANNED. PROJECT CONTRACTOR, THE MIDWEST UNIVERSITY CONSORTIUM FOR INTERNATIONAL ACTIVITIES HAS PROVIDED HIGHLY COMPETENT CONSULTANTS AND HAS BEEN DILIGENT IN PLACING AND MONITORING PARTICIPANTS. LESS OND LEARNED: ALTHOUGH THE PROJECT IS PROGRESSING WELL, IT WOULD HAVE LOST LESS MOMENTUM HAD THE LOAN PROJECT ALSO HAD SOME GRANT FINANCING. PROJECTS INVOLVING TECHNICAL ASSISTANCE ARE MORE

FLEXIBLE AND EASIER TO MANAGE IF THERE IS A GRANT AS WELL AS A LOAN COMPONENT. THIS PROJECT ALSO WOULD MOVE FASTER IF THERE WERE MORE INPUT FROM EXPERT CONSULTANTS BUT THE GOI HAS DIFFICULTY USING THEIR LOAN DOLLARS FOR THE HIGH COST OF FOREIGN EXPERTS. THUS, WHEN THE PROJECT WAS CHANGED FROM GRANT TO LOAN, TECHNICAL ASSISTANCE INPUT WAS GREATLY REDUCED. THE ANNUAL REVIEW MEETING HAS PROVEN TO BE A VERY SUCCESSFUL MECHANISM FOR EVALUATION PROGRESS AND KEEPING ALL PARTIES AGREED AS TO PROJECT PURPOSE AND ACTIVITIES.

Appendix B.2:

**Philippines: Project Design Information and Evaluation Documentation
from AID/DS/DIU Data Systems**

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 * COUNTRY/BUROAU: PHILIPPINES PROJECT: 4920259 SUB-PROJECT: 00 *
 * TITLE: SMALL FARMERS INCOME AND PRODUCTION INITIAL FY: 74 FINAL FY: 79 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 1,083 *

PROBLEM: THERE IS A NEED IN THE PHILIPPINES FOR THE INSTITUTIONALIZATION OF THE MANAGEMENT OF GOVERNMENT PROGRAMS TO EXPAND SMALL FARM RICE AND CORN OUTPUT.

STRATEGY: PROVIDE TECHNICAL ADVISORY SERVICES AND LIMITED TRAINING AND COMMODITY SUPPORT TO PROVIDE THE GOVT. OF PHILIPPINES WITH A MANAGEMENT INFORMATION SYSTEM (MIS) IN NATIONAL FOOD AND AGRICULTURE COUNCIL (NFAC) AND A DEVELOPMENT RESEARCH CAPABILITY TO ALLOW GOVT TO KNOWLEDGEABLY IMPLEMENT AND MANAGE PROGRAMS DESIGNED TO HELP THE SMALL FARMER.

SUMMARY: THIS PROJECT WILL INITIATE ECONOMIC ANALYSES RELATING TO SMALL FARMERS TO ASSIST THE BUREAU OF AGRICULTURAL ECONOMICS (BAECON) IN UTILIZATION OF AGRICULTURAL STATISTICS IN PROGRAM DEVELOPMENT AND IRRI IN THE APPLICATION OF RESEARCH FINDINGS TO ON-GOING PROJECTS. CONSULTANT ASSISTANCE WILL BE PROVIDED TO IMPROVE THE NFAC'S MIS AND IN THE DESIGN OF TEST-BED RESEARCH STUDIES. A TEAM OF CORN PRODUCTION AND SUPPORT SYSTEM SPECIALISTS WILL CONDUCT A REVIEW OF THE ENTIRE CORN PRODUCTION SYSTEM. A BASELINE STUDY WILL BE CONDUCTED CONSISTING OF A DETAILED QUESTIONNAIRE ADMINISTERED TO FARMERS TO DETERMINE FARM CONDITIONS.

GOAL: INCREASE THE PRODUCTIVITY OF SMALL SCALE FARMERS IN RICE AND CORN PRODUCTION AND DEVELOP ADDITIONAL SOURCES OF FARM INCOME FOR THESE FARMERS THROUGH CROP DIVERSIFICATION.

PURPOSE: AN ANALYTICAL/TECHNICAL CAPABILITY WITHIN KEY GOVERNMENT AGENCIES FOR PLANNING AND IMPLEMENTING EFFECTIVE INCOME AND PRODUCTION, RICE, CORN, AND MULTI-CROPPING PROGRAMS.

OUTPUTS: 1. A MANAGEMENT INFO. SYSTEM (MIS) IN NFAC (NATL FOOD AND AGR COUNCIL) CAPABLE OF MEASURING PROGRESS, PERFORMANCE, PROBLEMS IN PROGRAMS. 2. AN ECONOMIC ANALYSIS STAFF UNIT REGULARLY USING DATA FROM MIS TO PRODUCE STUDIES. 3. PROBLEMS OF CORN SECTOR ANALYZED, RECOMMENDATIONS MADE. 4. AN EXPANDED APPLIED RESEARCH NETWORK FOR A VARIETY OF SMALL FARMER CROPS AND FARM PRACTICES.

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* COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920260 SUB-PROJECT: 00 *
* TITLE: BICOL RIVER BASIN IMPROVEMENT INITIAL FY: 73 FINAL FY: 79 *
* ESTIMATED AMOUNT AUTHORIZED($000): 2,042 *
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PROBLEM: GOP LACKS THE ORGANIZATIONAL AND INSTITUTIONAL CAPABILITY TO CREATE AND IMPLEMENT AN INTEGRATED DEVELOPMENT PROGRAM ON A SECTORAL LEVEL. I

STRATEGY: DEVELOP THE BICOL RIVER BASIN AS A DEMONSTRATION/LEARNING PROJECT AS WELL AS FOR ITS INHERENT VALUE. I

SUMMARY: THIS IS A MASSIVE, MANY-FACETED PROJECT. USAID WILL PROVIDE TECHNICAL ADVISORS AND CONSULTANTS AND GRANTS TO SUPPORT THE NEEDED INSTITUTIONAL DEVELOPMENT. A SIX-YEAR PARTICIPANT TRAINING PROGRAM WILL CREATE A CADRE OF PROFESSIONAL STAFF. COMMODITY SUPPORT WILL BE PROVIDED FOR OFFICE EQUIPMENT. THE COMPONENT PROJECTS, RANGING FROM WATER RESOURCES TO FARM MECHANIZATION, WILL BENEFIT PRIMARILY FROM SHORT-TERM CONSULTANCY PROVIDED BY USAID. USAID WILL ALSO BRING TO BEAR THE ADVANTAGES OF ITS INFLUENCE, SUCH AS AERIAL MAPPING BY THE U.S. NAVY. I

GOAL: DEVELOPMENT OF THE RURAL SECTOR IN THE PHILIPPINES.

PURPOSE: AN ORGANIZATIONAL STRUCTURE AND INSTITUTIONAL CAPABILITY TO FORMULATE, PLAN, MANAGE, MONITOR AND EVALUATE AN INTEGRATED PROGRAM OF DEVELOPMENT FOR THE BICOL RIVER BASIN, INCLUDING ESTABLISHMENT OF A FEASIBILITY AND DATA BASE.

OUTPUTS: INSTITUTIONAL CAPABILITY; MANAGEMENT STUDY; PLANNING AND MANAGEMENT GROUPS; RESEARCH/DEMONSTRATION PROJECTS; SOCIO-ECONOMIC AND TECHNICAL SURVEYS; SYSTEMS PLANNING SIMULATION MODEL AND TRAINED TECHNICIANS, KEY PERSONNEL TRAINED. PILOT AND FEASIBILITY PROJECT OUTPUTS FOR WATER RESOURCES, CROPS, TRANSPORTATION, AGRIBUSINESS, LIVESTOCK, FISHERIES, FARM MECHANIZATION, AGRICULTURAL CREDIT, LAND REFORM, CO-OPS, AGRICULTURAL EDUCATION, HEALTH/NUTRITION, AREA DEVELOPMENT.

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* COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920280 SUB-PROJECT: 00 *
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* TITLE: AGRICULTURAL RESEARCH 492-T-039 INITIAL FY: 75 FINAL FY: 80 *
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* ESTIMATED AMOUNT AUTHORIZED($000): 5,000 *
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PROBLEM: FACED WITH A RAPIDLY INCREASING POPULATION AND INADEQUATE SUPPLIES OF BASIC FOOD AND FEED GRAINS THE GOVERNMENT OF THE PHILIPPINES IS CONCERNED ABOUT INCREASING FOOD PRODUCTION. SINCE MOST OF THE ARABLE LAND IS UNDER CULTIVATION, INCREASED PRODUCTION MUST RESULT FROM BETTER MANAGEMENT OF AGRICULTURAL RESOURCES. IMPROVED AGRICULTURAL RESEARCH IS ESSENTIAL TO BETTER MANAGEMENT OF RESOURCES.

STRATEGY: DECENTRALIZE AGRICULTURAL RESEARCH EFFORTS BY STRENGTHENING REGIONAL RESEARCH CENTERS CONCENTRATING ON LOCAL AGRICULTURAL PROBLEMS, AND SIMULTANEOUSLY STRENGTHENING NATIONAL COUNCIL FOR AGRICULTURAL RESEARCH TO COORDINATE REGIONAL CENTERS.

SUMMARY: CONTRIBUTION OF AID RESOURCES THROUGH THE PHILIPPINE COUNCIL FOR AGRIC RESEARCH (PCAR) WILL STRENGTHEN DIRECTION, COORDINATION, PROGRAMMING AND MGMT OF RESEARCH OF PCAR. ALSO EQUIPMENT, MACHINERY, LIBRARY FACILITIES AND MANPOWER DEVELOPMENT ASSISTANCE WILL BE PROVIDED TO IMPROVE RESEARCH CAPABILITY OF FOUR AGRICULTURAL RESEARCH CENTERS. INFORMATION SYSTEM IS ALSO ESTABLISHED TO PROVIDE RESEARCHERS WITH ACCESS TO KEY SCIENTIFIC LITERATURE.

GOAL: INCREASED AGRICULTURAL PRODUCTION BY SMALL FARMERS, INCREASING THEIR INCOME, AND CONTRIBUTING TO NATIONAL SELF SUFFICIENCY IN SELECTED FOOD GRAINS..

PURPOSE: IMPROVE RESEARCH CAPABILITY OF THE LA GRANJA, SOUTHERN MINDANAO, BICOL AND CENTRAL LUZON AGRICULTURAL RESEARCH CENTERS TO PROVIDE A CONTINUOUS STREAM OF INFORMATION AND TECHNOLOGICAL IMPROVEMENTS FOR THE PRODUCTION OF RICE, CORN, SORGHUM, SOYBEANS, OTHER LEGUMES AND OTHER FOOD AND FEED CROPS WHICH MAY BECOME IMPORTANT IN THE FUTURE.

OUTPUTS: PHILIPPINE COUNCIL FOR AGRICULTURAL RESEARCH (PCAR) CONSOLIDATED, AS GOP AGENCY FOR DEVEL, COORD, PROG AND EVAL OF RESEARCH POLICY AND AGRIC PROGS. 4 RESEARCH CENTERS ADEQUATELY STAFFED AND EQUIPPED, INFORMATION SYSTEM ESTABLISHED FOR PCAR TO PROVIDE ACCESS TO KEY SCIENTIFIC LITERATURE FOR RESEARCHERS. IMPROVED QUALITY AND QUANTITY OF OUTPUT IN RELATED ORGANIZATIONS, SUCH AS OTHER RESEARCH CENTERS AND TRAINING INSTITUTIONS.

* COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920288 SUB-PROJECT: 00 *
 * TITLE: PEST CONTROL INITIAL FY: 78 FINAL FY: 82 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 5,000 *

PROBLEM: A LARGE PORTION OF THE POTENTIAL CROP YIELD OF THE PHILIPPINES IS LOST TO PLANT DISEASES & PESTS. THIS SITUATION IS EXPECTED TO WORSEN WITH THE COUNTRY'S CURRENT EFFORTS TO BOOST CROP PRODUCTION THROUGH INCREASED CULTIVATION AND THE USE OF HIGHER YIELD BUT LESS RESISTANT CROP VARIETIES. ANTI CROP DISEASE & PEST RESEARCH IS UNDERWAY BUT THE COUNTRY LACKS THE INSTITUTIONAL MEANS TO ORGANIZE & SYSTEMATIZE THIS RESEARCH AND EFFECTIVELY DISSEMINATE THE RESULTING NEW CROP PROTECTION TECHNOLOGY TO THE FARMERS.

STRATEGY: FIVE-YEAR PROJECT CONSISTING OF A LOAN PROVIDING TECHNICAL ADVISORY ASSISTANCE, PARTICIPANT AND IN-COUNTRY TRAINING, AND FIELD AND LABORATORY EQUIPMENT TO ASSIST IN THE ESTABLISHMENT OF A NETWORK OF PEST CONTROL RESEARCH AND INFORMATION CENTERS. HOST COUNTRY PROVIDES OPERATIONAL FACILITIES, TRAINING EQUIPMENT, IN-SERVICE TRAINING, OPERATIONAL STAFF AND ADMINISTRATION, AND LONG-TERM MAINTENANCE. OTHER DONOR: GERMANY.

SUMMARY: LOAN TO THE GOVERNMENT OF THE PHILIPPINES TO ASSIST WITH THE START-UP PHASE OF A NATIONAL CROP PROTECTION CENTER (NCPC) AND 7 REGIONAL CROP PROTECTION CENTERS (PCPC'S). THESE CENTERS ARE TO PROVIDE THE PHILIPPINES WITH A NETWORK OF INSTITUTIONS FOCUSING ON CROP DISEASE & PEST CONTROL RESEARCH AND INFO DISSEMINATION. WHEN OPERATIONAL, THE NCPC WILL: 1. DEVELOP CROP PROTECTION SYSTEMS AGAINST PESTS & DISEASES OF ALL MAJOR CROPS. 2. DEVELOP & IMPLEMENT MANPOWER TRAINING PROGRAMS FOR CROP PROTECTION PERSONNEL TO INCLUDE GRAD & UNDERGRAD PROGRAMS IN PEST MANAGEMENT AT THE U OF PHILIPPINES AT LOS BANOS (UPLB); IN-SERVICE TRAINING FOR TECHNICIANS, EXTENSION AGENTS & KEY FARMERS; THE FUNDING OF FELLOWSHIPS IN RESEARCH & EXTENSION LEVEL PEST MANAGEMENT; AND THE SPONSORSHIP OF SEMINARS PROMOTING COORDINATION OF RESEARCH. 3. PROVIDE THE PUBLIC WITH INFO ON SAFE & EFFECTIVE PEST CONTROL THROUGH IDENTIFICATION OF PESTS IN DIAGNOSTIC CLINICS, DEVELOPMENT OF PEST CONTROL TEACHING MATERIALS, A MASS MEDIA INFO CAMPAIGN, DISSEMINATION OF RESEARCH FINDINGS TO RESEARCHERS, EXTENSION AGENTS, FARMERS & GOVT AGENCIES AND THE DEVELOPMENT OF MODEL PEST CONTROL PILOT PROGRAMS. THE PCPC'S WILL PERFORM SIMILAR FUNCTIONS EXCEPT THAT EMPHASIS IS TO BE PLACED ON APPLIED RESEARCH FOR THE RESPECTIVE REGION, DEMOS & FIELD EXTENSION WORK. THE LOAN PROVIDES FARM EQUIPMENT & VEHICLES, LAB & OFFICE EQUIPMENT, AND LIBRARIES FOR THE CENTERS. THE CENTER FACILITIES ARE CONSTRUCTED THROUGH GOP FUNDING & A GOP/GERMANY CROP PROTECTION PROGRAM. THE LOAN AUGMENTS THE CENTERS' INDIGENOUS STAFF WITH US SENIOR RESEARCHERS IN PEST MANAGEMENT, FORECASTING & MONITORING; AND SHORT-TERM SPECIALISTS TO ASSIST WITH ESTABLISHMENT OF AN ENVIRONMENTAL/HUMAN SAFETY LAB AND PROVIDE IN-SERVICE TRAINING IN USE OF EQUIPMENT & THE DEVELOPMENT OF RESEARCH & EXTENSION PROGRAMS. THESE ADVISORS SERVE UNTIL THE RETURN OF INDIGENEOUS PERSONNEL, TRAINED BY LOAN'S DEGREE TRAINING COMPONENT; PHD TRAINING IN US FOR 24 IN AREAS OF WEED SCIENCE, BIOMETRICS, VIROLOGY, ENTOMOLOGY, PLANT PATHOLOGY AND PEST MANAGEMENT, FORECASTING & SURVEILLANCE; MS LEVEL TRAINING AT THE UPLB. NCPC STAFF DEVELOP A CURRICULUM IN SPECIALTY AREAS OF PEST MANAGEMENT AT THE UPLB. PROJ FUNDS 50 FELLOWSHIPS FOR THESE STUDIES. THE PRIMARY BENEFICIARIES ARE PHILIPPINE FARMERS.

GOAL: FOOD SELF-SUFFICIENCY AND INCREASED SMALL FARMER PRODUCTIVITY AND INCOME THROUGH REDUCED CROP LOSSES TO PESTS.

PURPOSE: TO HELP ESTABLISH A PLANT PROTECTION/PEST CONTROL RESEARCH, DEVELOPMENT AND TRAINING SYSTEM WHICH WILL RESPOND TO THE NEEDS OF SMALL FARMERS.

OUTPUTS: 1. NATIONAL CROP PROTECTION CENTER AND REGIONAL CROP PROTECTION CENTERS ARE ORGANIZED AND PHYSICAL FACILITIES COMPLETED. 2. CORE STAFF OF RESEARCH AND TRAINING PERSONNEL ARE TRAINED. 3. LINKAGES ESTABLISHED AMONG RESEARCH, EXTENSION, PESTICIDE DISTRIBUTION AND GOVERNMENT POLICY ORGANIZATIONS AND THE CENTERS. 4. CENTERS STAFF ACTIVELY ENGAGED IN DETERMINING EXTENT OF CROP LOSSES, RESEARCH PRIORITIES AND DEVELOPING VIABLE PEST MANAGEMENT SYSTEMS. 5. CENTER STAFF ACTIVELY ENGAGED IN TRAINING EXTENSION TECHNICIANS, KEY FARMERS AND THE INTERESTED PUBLIC IN LATEST PEST MANAGEMENT PRACTICES.

* COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920289 SUB-PROJECT: 04 *
 * TITLE: BICOL INTEGRATED AREA DEVELOPMENT III INITIAL FY: 79 FINAL FY: 85 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 5,000 *

PROBLEM: IN ORDER TO OVERCOME THE CONSTRAINTS TO THE DEVELOPMENT OF THE BICOL RIVER BASIN AREA, THE GOVERNMENT OF THE PHILIPPINES (GOP) HAS UNDERTAKEN, WITH THE HELP OF AID, A COMPREHENSIVE AND PHASED BICOL RIVER BASIN DEVELOPMENT PROGRAM (BRBDP). ONE OF THE MAJOR PROBLEMS TO BE OVERCOME IS THE DETERIORATION OF PUBLIC FOREST LANDS IN THE UPLAND LAKE BUHI WATERSHED AREA AND THE RELATED USE OF IMPROPER AND LESS THAN OPTIMALLY PRODUCTIVE AGRICULTURAL PRACTICES BY THE FARMERS OF THE AREA.

STRATEGY: LOAN TO THE GOVT OF THE PHILIPPINES (GOP) WILL FINANCE TECHNICAL ASSISTANCE IN REFORESTATION, LAND IMPROVEMENT, AND FARMER ORGANIZATION/TRAINING FOR AGRO-FORESTATION/WATERSHED DEVELOPMENT COMPONENT OF SIX YEAR BICOL INTEGRATED AREA DEVELOPMENT III PROJECT OF BICOL RIVER BASIN DEVELOPMENT PROGRAM. (BRBDP), IMPLEMENTATION WILL BE BY UPLAND HYDROECOLOGY PROGRAM (UHP) AND GOP AGENCIES UNDER SUPERVISION OF GOP'S NATIONAL IRRIGATION ADMINISTRATION (NIA). GOP WILL FUND ADDED COSTS.

SUMMARY: LOAN TO THE GOVERNMENT OF THE PHILIPPINES (GOP) WILL INCREASE AGRICULTURAL PRODUCTION AND PRODUCTION-RELATED EMPLOYMENT IN THE BICOL RIVER BASIN AREA. PURPOSE WILL BE ACHIEVED BY IMPROVING AREA WATER AND FOREST RESOURCES AND FACILITIES AND BY PROVIDING AREA FARMERS AND FARM ORGANIZATIONS WITH AN OPERATIONS AND MAINTENANCE (O&M) CAPABILITY FOR NEW RESOURCES AND FACILITIES AND WITH OTHER APPROPRIATE AGRICULTURAL TECHNOLOGY. PROJECT IS PART OF GOP'S AID-SUPPORTED BICOL RIVER BASIN DEVELOPMENT PROGRAM (BRBDP) AND CONTAINS FOUR DISTINCT SUBPROJECTS. SUBPROJECT FOUR IS DESIGNED TO ACHIEVE A MORE PRODUCTIVE AND ENVIRONMENTALLY SOUND USE OF CULTIVATED UPLANDS AND THE PROTECTION OF FORESTED WATERSHED AREAS. PROGRAM AREA IS THE 10,000 HECTARE LAKE BUHI WATERSHED. DIRECT LAND IMPROVEMENTS WILL BE MADE ON 1,350 HECTARES FARMED BY 900 SMALL-SCALE UPLAND FARMERS. TO MEET FAMILY CORN AND RICE REQUIREMENTS, UP TO 280 HECTARES WILL BE BENCH-TERRACED OR CONTOUR FRAMED. APPROXIMATELY 900 HECTARES OF FAMILY ORCHARD LOTS AND 180 HECTARES OF FIREWOOD LOTS WILL BE ESTABLISHED. THERE WILL ALSO BE REFORESTATION OF 500 HECTARES OF DENUDED PUBLIC FOREST LANDS. SEEDLINGS OF ORCHARD AND FORESTRY TREE SPECIES WILL BE RAISED IN PROJECT NURSERIES ON SITE AND/OR SECURED FROM GOP AGENCIES IF TRANSPORTATION IS FEASIBLE. GRADED MOUNTAIN TRAILS WILL BE IMPROVED TO FACILITATE ACCESS FOR PRODUCTION INPUTS, MARKETING OR PRODUCE AND FORESTRY PROTECTION PERSONNEL. IN ADDITION, AREA FARMERS WILL BE ASSEMBLED AND TRAINED IN THE IMPROVED CROPPING SYSTEMS AS WELL AS IN SOIL CONSERVATION PRACTICES SUITED TO THE TERRAIN. TECHNICAL ASSISTANCE WILL BE GIVEN TO HELP FARMERS CARRY OUT THESE NEW PRACTICES. TRAINING WILL ALSO BE PROVIDED FOR THE PROJECT STAFF AND IN-SERVICE SEMINARS WILL BE PROVIDED FOR PROJECT TECHNICIANS. IMPLEMENTATION WILL BE BY THE UPLAND HYDROECOLOGY PROGRAM (UHP) AND OTHER GOP AGENCIES UNDER THE SUPERVISION OF THE GOP'S NATIONAL IRRIGATION ADMINISTRATION (NIA).

GOAL: IMPROVE THE QUALITY OF LIFE OF THE POOR IN THE PROJECT AREA. SUBGOALS. 1. INCREASE AGRICULTURAL PRODUCTION/PRODUCTIVITY PER HECTARE. 2. INCREASE PRODUCTIVE EMPLOYMENT OPPORTUNITIES. 3. REVERSE THE DETERIORATION OF UPLAND WATERSHED AREAS.

PURPOSE: 1. UPLAND FARMERS UTILIZING MORE PRODUCTIVE AND ENVIRONMENTALLY SOUND LAND-USE PRACTICES IN THE LAKE BUHI WATERSHED. 2. GOVERNMENT OF THE PHILIPPINES (GOP) EFFECTIVELY MANAGING EXISTING AND REPLANTED PUBLIC FOREST LANDS IN THE LAKE BUHI WATERSHED.

OUTPUTS: 1. PROJECT STAFF TRAINED. 2. IN-SERVICE SEMINARS FOR TECHNICIANS. 3. ASSEMBLIES FOR FARMER ORGANIZATIONS AND TRAINING. 4. NEW AREA TERRACED FOR RICE/CORN PRODUCTION. 5. NEW MIXED AGRO-FORESTRY ORCHARDS. 6. FIREWOOD LOTS ESTABLISHED. 7. DENUDED AREAS REFORESTED. 8. UPLAND ACCESS TRAILS CONSTRUCTED.
 1. LOAN FUNDS. 2 GOP FUNDS.

 * COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920310 SUB-PROJECT: 00 *
 * TITLE: BICOL INTEGRATED DEVELOPMENT II INITIAL FY: 78 FINAL FY: 82 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 3,000 *

PROBLEM: THE BICOL REGION OF THE PHILIPPINES IS AN ECONOMICALLY DEPRESSED AREA CHARACTERIZED BY A DECLINING PER CAPITA INCOME (ALREADY PHILIPPINES' LOWEST), HIGH UNEMPLOYMENT, AND SERIOUS MALDISTRIBUTION OF INCOME. THE REGION'S PHYSICAL AND ECONOMIC ISOLATION, ITS RAPID (3.3%) RATE OF NATURAL POPULATION GROWTH, INEFFICIENT PRODUCTION TECHNOLOGY, INEQUITABLE LAND TENURE, FRAGMENTED FARMLOTS, PERIODIC FLOODING, AND POOR HEALTH/NUTRITION PRACTICES CONSTRAIN MORE RAPID DEVELOPMENT IN THE REGION.

STRATEGY: FIVE-YEAR PROJECT CONSISTS OF LOAN FOR IMPORTED EQUIPMENT (IRRIGATION PUMPS, VEHICLES, TYPEWRITERS) AND 60% OF THE COSTS OF CONSTRUCTION OF IRRIGATION, DRAINAGE, AND ROAD FACILITIES, TO IMPROVE THE SOCIO-ECONOMIC CONDITIONS IN ONE PORTION OF THE BICOL RIVER BASIN AREA OF THE PHILIPPINES. HOST COUNTRY FINANCES ALL OTHER COSTS INCLUDING THOSE ASSOCIATED WITH DOMESTIC DEVELOPMENT, LAND CONSOLIDATION/TENURE REFORM, IN-COUNTRY TRNG, APPLIED AGRIC RESEARCH, AND PROJ OPER & MGMT.

SUMMARY: LOAN PROVIDED TO THE PHILIPPINE GOVERNMENT TO ASSIST IN FINANCING THE INTEGRATED DEVELOPMENT EFFORT IN THE BICOL RIVER BASIN AREA COMPRISING 2300 HA FARMED BY 1230 FARMERS. PROJECT COMPONENTS INCLUDE FACILITIES CONSTRUCTION, HOMESITE DEVEL, LAND CONSOLIDATION/TENURE REFORM, ORGANIZATION DEVEL, TRAINING, AND APPLIED AGRIC RESEARCH. CONSTRUCTION OF 5 SEPARATE IRRIGATION SYSTEMS WILL INCLUDE 11 PUMP HOUSES, 19 ELECTRIC PUMPS, 23 KM OF MAIN CANALS LINED WITH CONCRETE BLOCKS, AND 131 KM OF LATERALS & ON-FARM DITCHES MADE WITH COMPACTED EARTH. 92 KM OF DRAINAGE CANALS WILL ALSO BE CONSTRUCTED. 33 KM OF SERVICE ROADS AND 42 KM OF FARM ACCESS PATHS WILL BE BUILT WITH A GRAVEL SURFACE FOR ALL-WEATHER ACCESS. AT EACH OF THE 7 BARANGAYS (COMMUNITIES) WITHIN THE PROJ AREA A 3-ROOM MULTIPURPOSE BUILDING WILL BE CONSTRUCTED TO SERVE AS A PROJ MGMT OFFICE (PMO), TRNG FACILITY, AND MEETING HALL. FARM HOUSES WILL BE MOVED FROM THEIR SCATTERED FIELD LOCATIONS TO PLANNED COMMUNITY HOMESITE AREAS AT EACH BARANGAY. EACH HOUSEHOLD WILL BE ALLOCATED A HOMELOT AND MATERIALS FOR CONSTRUCTION OF A WATER-SEALED PIT PRIVY. CENTRAL WATER SYSTEMS FOR EACH AREA WILL BE CONSTRUCTED. THE PRESENT 2668 FARMLOTS WILL BE CONSOLIDATED INTO 1230 AND REDISTRIBUTED TO 1230 FARMERS. TO FACILITATE COOPERATIVE FARMING OPERATIONS, FARMLOTS WILL BE ORGANIZED INTO 49 COMPACT FARMS AVERAGING 17 HA EACH TILLED BY 10 FARMERS. FIVE IRRIGATION ASSN'S WILL BE FORMED. THE PMO WILL ORGANIZE HOMEMAKERS' CLUBS & YOUTH GROUPS. TRAINING FOR FARMERS, THEIR WIVES, AND LOCAL LEADERSHIP WILL BE CONDUCTED IN A WIDE VARIETY OF AREAS. EXTENSION AGENTS WILL INTRODUCE MODERN, DOUBLE-CROP TECHNOLOGY PACKAGES, INCLUDING THE LABOR-INTENSIVE JAPANESE METHOD OF RICE CULTURE. THE OPTIMUM PACKAGE WILL BE DEVELOPED BY AN APPLIED RESEARCH PROGRAM WITHIN THE PROJECT AREA. TOTAL PROJECT RICE PRODUCTION IS EXPECTED TO INCREASE FROM 106,000 MT TO 371,000 MT BY 1986. THE USAID LOAN WILL FINANCE THE IMPORTED PUMPS, VEHICLES, TYPEWRITERS, AND 60% OF THE COSTS OF ENGINEERING DESIGN & CONSTRUCTION OF IRRIGATION, DRAINAGE, AND SERVICE/ACCESS ROAD FACILITIES. THE GOP WILL FINANCE ALL OTHER COSTS.

GOAL: TO IMPROVE THE SOCIO-ECONOMIC SITUATION AND THE QUALITY OF LIFE OF THE RURAL POOR RESIDING IN THE PROJECT AREA.

PURPOSE: 1. FARMERS PRACTICING APPROPRIATE MODERN CROP PROD TECH. 2. FARMS UTILIZING NEW IRRIGATION & DRAINAGE SYSTEMS & CULTIVATING 2 CROPS ANNUALLY. 3. FARMERS UTILIZING/MAINTAINING ALL-WEATHER SERVICE ROADS, FARM PATH NETWORKS. 4. REDUCED HOME-TO-FARM & LOT-TO-LOT TRAVEL TIME. 5. FARM FAMILIES ADOPTING BACKYARD PROJECTS TO RAISE LIVESTOCK & VEGETABLES. 6. IMPROVED LAND TENURE SECURITY. 7. SIGNIFICANT INCREASE IN FARM PLAN ACCEPTORS. 8. IMPROVED SANITARY ENVIRON. (3 OTHER PURPOSE LISTED)

1. SERVICE ROADS & PATHS, 2162 HA IRRIGATED, 7 MULTIPURPOSE BLDGS, 1 ELEMENTARY SCHOOL. 2. HOMESITE DEVEL: 7 HOMESITES COMPLETED, 1010 HOMELOTS DEVELOPED & DISTRIBUTED, 1010 HOUSEHOLDS RELOCATED. 1230 HANDPUMPS INSTALLED, 1230 WATER-SEALED PIT PRIVIES. 3. LAND CONSOLIDATION & TENURE REFORM: 2663 FARMLOTS CONSOLIDATED, 1253 CONSOLIDATED FARMS DEMARCATED. 4. ORGANIZATIONAL DEVEL: 123 COMPACT FARMS, 42 DISTRICT IRRIG ASSN'S, 5 IRRIG ASSN'S, 32 HOMEMAKERS' CLUBS, 65 YOUTH CLUBS. 5. TRAINING: 34 PROJ IMPLEMENTORS, 18 PROJ COMM MEMBERS, 70 BARANGAY LEADERS, 1230 COMPACT FARM MEMBERS, ET AL. 6. APPLIED AGR RSRCH.

EVALUATION DOCUMENTATION

COUNTRY/BUREAU: PHILIPPINES PROJECT: 4920260
 TITLE: BICOL RIVER BASIN DEVELOPMENT INITIAL FY: 73 FINAL F: 79

DOCUMENT TYPE: SPECIAL EVALUATION REPORT
 TITLE: AN EVALUATION OF THE RIVER BASIN DEVELOPMENT
 PROGRAM (07/01/77-08/01/77)

PUBLICATION DATE: 08/12/77
 DIC REFERENCE CENTER NUMBER:

AUTHOR: CORPUZ, EDUARDO G

ORGANIZATION: USAID/PHILIPPINES

PROJECTS (AND SUB-PROJECTS) EVALUATED: 492026000

ABSTRACT: EVALUATES BICOL RIVER BASIN DEVELOPMENT PROGRAM (BRBDP) IN THE PHILIPPINES FROM 1965-77. PROJ PURPOSE WAS TO CREATE INSTIT CAPABILITY TO FORMULATE, PLAN, MANAGE, MONITOR, AND EVALUATE INTEGRATED BICOL RIVER BASIN (BRB) DEVELOPMENT; ESTABLISH FEASIBILITY STUDIES & DATA BASE; AND IDENTIFY FUTURE PROGRAMS. EVALUATN BASED ON DOCUMENTS & INTERVIEWS. ALTHOUGH ALL STUDIES ARE NOT COMPLETED, PROJ IS AHEAD OF SCHEDULE. EVALUATOR CONCLUDES BRBDP HAS ENJOYED SUCCESS DUE TO EARLY PLANNING, PUBLIC FUNDS, WELL-CHOSEN AGR PROJS, EFFECTIVE ASSIST PROGRAM OFFICE COOPERATN, AND COOPERATN AMONG AGENCIES. AN INTERAGENCY PLANNING APPARATUS HAS BEEN ESTABLISHED TO SET TARGETS & COMPLETE PREFEASIBILITY & FEASIBILITY STUDIES ON COMPONENT PROJECTS. LOCAL PARTICIPATION AT ALL ADMIN LEVELS HAS BEEN ENCOURAGED IN DECISION MAKING. BRBDP OFFICE PROVIDED PLANNING CAPACITY TO TRANSLATE INDIVIDUAL DEVELOPMENTAL DISTRICT NEEDS INTO OPERATIONAL PROJS. USAID STAFF HAS ASSISTED SOCIAL SURVEY RESEARCH UNIT IN INSTIT OF PHILIPPINE CULTURE, CONDUCTED BASELINE & SPECIAL SURVEYS IN BRB, AND HAS UTILIZED PUBLISHED REPORTS TO DETERMINE PRIORITIES AND SUPPORT FUNDING PROPOSALS. ALSO, NUMEROUS PROJECT-RELATED STUDIES HAVE BEEN COMPLETED RELATING TO FUTURE PLANS, HEALTH, NUTRITN, FARMING, AND ECONOMICS. ALTHOUGH FUTURE POTENTIAL IS SUBSTANTIAL, GAINS ARE NOT EXPECTED BEFORE 1982 DUE TO NECESSARY IMPROVEMENTS IN BRB'S IRRIGATN SYS. OTHER DELAYS HAVE RESULTED DUE TO SERIOUS ORGANIZATN PROBS IN FORMING SUB-REGIONAL ORGANIZATNS AND AREA-WIDE ACTIONS, INSTITUTED PROGRAMS WHICH SHOULD HAVE BEEN ADMINISTERED ON LOCAL LEVELS. EVALUATOR RECOMMENDS THAT: 1) LONG-TERM, LOW-KEY EFFORTS BE MAINTAINED BETWEEN LINE AGENCIES; 2) CONTRARY TO THE NEW AGRICULTURAL PLAN, PROGRAM OFFICE MAINTAIN ITS ADMIN ROLE (ORGANIZER, PLANNER, GAD-FLY, LOBBYIST, ETC), STAFF BE SLIGHTLY INCREASED & PROJ AREA NOT BE EXPANDED OUTSIDE OF BRB; 3) OVERALL STUDY STRATEGIES BE ESTABLISHED; 4) AGR RESEARCH BE INCREASED; 5) CHIEF OFFICERS & STAFF MEET PERIODICALLY; 6) PROJ PREPARATN BE STRESSED; AND 6) PROGRAM OFFICE CONTINUE TO STIMULATE VILLAGES TO DEVEL LOCAL ACTIVITIES BY INVESTING THEIR OWN TIME AND MONEY.

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*               EVALUATION DOCUMENTATION               *
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* COUNTRY/BUREAU: PHILIPPINES                      PROJECT: 4920302 *
*                                     *
* TITLE: INTEGRATED AGRICULTURAL PROD AND MARKET  INITIAL FY: 77  FINAL FY: 82 *
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DOCUMENT TYPE: AUDIT REPORT
 TITLE: INTEGRATED AGRICULTURAL PRODUCTION AND MARKETING
 AUTHOR:

PUBLICATION DATE: 05/23/79
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: AID/W

PROJECTS (AND SUB-PROJECTS) EVALUATED: 492030200

ABSTRACT: EVALUATES PROJECT TO STRENGTHEN THE AVILITY OF VARIOUS PHILIPPINE GOVERNMENT AGENCIES AND ACADEMIC INSTITUTIONS TO IMPROVE AGRICULTURAL PRODUCTION AND MARKETING, AS OF 5/23/79. THIS EVALUATION EXPANDS UPON AN EARLIER EVALUATION. USAID OBLIGATED \$9,715,000 FOR THE FIRST THREE YEARS OF THE PROJECT. THE GOP (GOVERNMENT OF THE PHILIPPINES) CONTRIBUTION IS \$20,250,000 FOR THE FULL 5 YEARS OF THE PROJECT. THE GGP NATIONAL ECONOMIC DEVELOPMENT AUTHORITY, THE MINISTRY OF AGRICULTURE, THE UNIVERSITY OF THE PHILIPPINES AT LOS BANOS, AND CENTRAL LUZON STATE UNIVERSITY ARE PARTICIPATING IN THE PROJECT. KANSAS STATE UNIVERSITY (KSU) WAS CONTRACTED FOR TECHNICAL ASSISTANCE, US TRAINING OF MS AND PHD CANDIDATES, AND ASSISTANCE IN THE CONSTRUCTION OF A UNIVERSITY FOOD PROCESSING PLANT. KSU IS ALSO ASSISTING IN THE PROVISION OF LIBRARY EQUIPMENT TO TWO OTHER UNIVERSITIES AND ADDITIONAL COMPUTER SPACE AT THE MINISTRY OF AGRICULTURE. KSU'S OVERALL PERFORMANCE HAS BEEN POOR. THERE WERE RECURRING MISUNDERSTANDINGS OVER JOB DESCRIPTIONS, QUALIFICATIONS AND AVAILABILITY OF ADVISORS, KSU'S ROLE IN THE PARTICIPANT TRAINING PROGRAM, AND REIMBURSEMENTS. USAID/P AND THE ASIA BUREAU DID NOT GIVE SUFFICIENT SCRUTINY TO KSU'S CAPABILITIES PRIOR TO THE PROJECT. ALSO, THE FINANCING OF ACTIVITIES PRIOR TO PROJECT AUTHORIZATION, AS WELL AS THE FUNDING OF PARTICIPANTS UNDER ANOTHER PROJECT, SHOWED A SERIOUS DISRECORD OF FINANCIAL DISCIPLINE. RECOMMENDATIONS INCLUDE: (1) A THOROUGH ANALYSIS OF THE PROJECT BY THE ASIA BUREAU; (2) SUBCONTRACTING WITH OTHER EDUCATIONAL INSTITUTIONS FOR NEEDED ADVISORS; (3) ESTABLISHING A SEPARATE KSU ADMINISTRATIVE OFFICE, SOLELY FOR THIS PROJECT; AND (4) A REVIEW OF KSU BILLING.

OPTION AUTOMAC,NOITEMS,NOHEADING,NLCHAR '!',COMMENT '!',

Appendix B.3:

**Bangladesh: Project Design Information and Evaluation Documentation
from AID/DS/DIU Data Systems**

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* COUNTRY/BUREAU: BANGLADESH PROJECT: 3880002 SUB-PROJECT: 00 *
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* TITLE: DEVELOPMENT SERVICES AND TRAINING INITIAL FY: 74 FINAL FY: 79 *
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* ESTIMATED AMOUNT AUTHORIZED($000): 1,800 *
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PROBLEM: SEVERE SHORTAGES OF TRAINED PERSONNEL, PARTICULARLY AT THE MANAGEMENT LEVEL, THREATEN SUCCESSFUL IMPLEMENTATION OF RURAL DEVELOPMENT PROGRAMS INCREASING AGRICULTURAL PRODUCTIVITY.

STRATEGY: PROVIDE TECHNICAL ASSISTANCE, ADVISORS AND TRAINING TO STRENGTHEN THE CAPABILITIES OF RURAL DEVELOPMENT AND AGRICULTURAL AGENCIES OF BANGLADESH GOVERNMENT (RDG).

SUMMARY: AID WILL PROVIDE TECHNICAL ASSISTANCE, ADVISORY SERVICES AND JOB-RELATED TRAINING ACTIVITIES AT ALL LEVELS OF PLANNING, RESEARCH, MANAGEMENT AND EVALUATION OF RURAL DEVELOPMENT PROGRAMS DESIGNED TO INCREASE PRODUCTION CREDIT, FARMER TRAINING AND AGRICULTURAL INPUTS TO SMALL FARMERS. THIS SYSTEMS OPERATIONS APPROACH AIMS AT MORE LABOR-INTENSIVE, HIGH-EQUITY PROJECTS. EXPANSION OF IRRIGATION, USE OF HIGH-YIELDING SEEDS, AND INCREASED USE OF FERTILIZERS/PESTICIDES ANTICIPATE A 5% INCREASE IN AGRICULTURE PRODUCTION; BDG WILL HAVE CAPACITY TO MEET ITS OWN PERSONNEL AND TECHNICAL NEEDS BY END OF PROGRAM GRANT (3 YEARS).

GOAL: INCREASED AGRICULTURAL PRODUCTIVITY IN BANGLADESH. I

PURPOSE: MIDDLE-LEVEL TECHNICAL AND ADMINISTRATIVE MANPOWER FOR PLANNING, RESEARCH, MANAGEMENT AND EVALUATION OF RURAL AND AGRICULTURAL DEVELOPMENT PROGRAMS (IRDP IN OUTPUT CELL-INTEGRATED RURAL DEVELOPMENT PROGRAM). I

OUTPUTS: 1.60 TRAINED BENGALI PLANNERS, RESEARCH SPECIALISTS, PROGRAM MANAGERS, EVALUATION SPECIALISTS EMPLOYED IN RURAL DEVELOPMENT AGENCIES WITHIN 3 YEARS; 2.SMALL-SCALE IRRIGATION, WATERMANAGEMENT AND ELECTRIFICATION PROJECTS IMPLEMENTED; 3.COOPERATIVE MKTG PLAN FOR IKDP THANAS ESTABLISHED; 4.IMPROVED BDGCAPACITY FOR AGR POLICY, TECH RES, PHYSICAL PLANNING SYSTEMS RURAL PUBLIC WORKS, REPORTING/MGMT INFORMATION ANALYSIS SYSTEM IN AGR MINISTRY; 5.INCOME DISTRIB SYSTEM ESTABLISHED. I

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 * COUNTRY/BUREAU: BANGLADESH PROJECT: 3880003 SUB-PROJECT: 00 *
 * TITLE: AGRICULTURAL RESEARCH INITIAL FY: 76 FINAL FY: 82 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 8,224 *

PROBLEM: THE ABSENCE OF AN ORGANIZATION WHICH PROVIDES OVERALL POLICY GUIDANCE ON RESEARCH AND COORDINATION OF RESEARCH AMONG EXISTING INSTITUTIONS, PARTICULARLY FOR NON-RICE FOOD CROPS. STRATEGY: EXPAND THE ROLE OF AGRICULTURAL RESEARCH COUNCIL AND DEVELOP THE AGRICULTURAL RESEARCH INSTITUTE FOR NON-RICE CROPS.

SUMMARY: THIS PROJECT WILL UPGRADE FACILITIES AND LINKAGES AMONG THE EXISTING RESEARCH INSTITUTIONS UNDER THE TUTELAGE OF ARC. THE COMBINE WILL SHARE FACILITIES AND FUNDING AND ESTABLISH COMMUNICATION WITH THE INTERNATIONAL RESEARCH COMMUNITY (THROUGH ISSCC). AID CAN BRING TO BEAR VAST RESEARCH EXPERIENCE ON THE SUBCONTINENT. FUNDS WILL GO TOWARD TRAINING, EQUIPMENT, AND STAFF. (ARC-AGRICULTURAL RESEARCH COUNCIL).

GOAL: TO ACHIEVE SUSTAINED, EQUITABLE GROWTH IN AGRICULTURAL PRODUCTIVITY. PURPOSE: ESTABLISH AN INSTITUTIONAL FRAMEWORK (ARI-ARC) CAPABLE OF HIGH PRIORITY RESEARCH (BOTH BIOLOGIC AND ECONOMIC) THAT SUPPLIES BANGALEE FARMERS WITH RESEARCH INFORMATION NEEDED FOR SIGNIFICANT CROP DIVERSIFICATION (WHEAT, PULSES, VEGETABLES, OILSEEDS AND CROPPING SYSTEMS). (ARI-AGR RESEARCH INSTITUTE; ARC-AGR RESEARCH COUNCIL).

OUTPUTS: CROSS-DISCIPLINARY RESEARCH PROGRAMS ON PROBLEMS FACING BENGALI FARMERS ESTABLISHED BY NOVEMBER, 1976. COMMUNICATIONS LINKAGES BETWEEN SUB-STATIONS AND FARMERS ESTABLISHED FOR FEEDBACK BY MARCH, 1976. REQUISITE TRAINING OF SENIOR STAFF COMPLETED BY 1980. COORDINATION CAPACITY OF ARC FULLY ESTABLISHED BY 1978. ISSCC ESTABLISHED BY JANUARY, 1976. ARI FACILITIES COMPLETELY CONSTRUCTED AND EQUIPPED BY DECEMBER, 1977. RELEASE OF RESEARCH RESULTS. IMPLEMENT ADVANCED EXPERIMENTS.

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* COUNTRY/BUREAU: BANGLADESH PROJECT: 3880008 SUB-PROJECT: 00 *
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* TITLE: PROJECT STUDIES INITIAL FY: 74 FINAL FY: 79 *
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* ESTIMATED AMOUNT AUTHORIZED($000): 2,266 *
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PROBLEM: THE GOVT OF BANGLADESH'S MUCH NEEDED FIVE-YEAR PLAN(FYP)FOR AGRICULTURAL & RURAL DEVELOPMENT IT,AT PRESENT,LITTLE MORE THAN A COLLECTION OF UNDEFINED PROJECT TITLES. THE COUNTRY LACKS SUFFICIENT CONSULTATIVE RESOURCES FOR UNDERTAKING THE STUDIES NECESSARY FOR THE DEVELOPMENT OF CONCRETE FYP PROJECT PLANS & PROPOSALS. THUS,AID & OTHER DONORS SEEKING TO ASSIST IN THE IMPLEMENTATION OF THE FYP HAVE NO WAY OF DETERMINING WHAT PROJECTS ARE SUITABLE FOR THEIR SUPPORT OR THE MAGNITUDE & NATURE OF THE SUPPORT REQUIRED.

STRATEGY: THREE-YEAR PROJECT CONSISTS OF A GRANT PROVIDING TECHNICAL ADVISORY ASSISTANCE BY CONTRACTORS,COMMODITIES,AND PARTICIPANT TRAINING TO CONDUCT A SERIES OF AGRICULTURE AND RURAL DEVELOPMENT FEASIBILITY STUDIES. HOST COUNTRY PROVIDES OPERATIONAL PERSONNEL,COMPLEMENTARY PROJECT FUNDING,AND OVERALL PROJECT ADMINISTRATION.

SUMMARY: GRANT TO THE GOVT OF BANGLADESH(BDG)FINANCES 6-12 FEASIBILITY STUDIES IN THE AGRICULTURAL,RURAL DEVELOPMENT,AND RELATED SECTORS WHICH WOULD PROVIDE THE BASIS FOR SPECIFIC FUTURE PROJECTS LIKELY FINANCED BY AID OR OF AID INTEREST. THE BDG WILL SELECT POTENTIAL STUDIES USING INPUT FROM STUDY NEEDS IDENTIFIED THROUGH ON-GOING DONOR PROJECTS AND/OR BY ITS OWN AGENCIES. THIS SELECTION WILL COMPRISE A PROGRAM PLAN WHICH WILL BE FURTHER DEVELOPED BY RESPONSIBLE MINISTRIES INTO A COLLECTION OF DETAILED PROPOSALS. WHEN USAID BELIEVES THAT A STUDY ACTIVITY IN THE PROGRAM PLAN HAS BEEN DEVELOPED TO A POINT WHERE IT IS ELIGIBLE FOR FINANCING,USAID WILL ASSIST THE IMPLEMENTING AGENT WITH THE PREPARATION OF A FORMAL REQUEST,STATING THE ACTIVITY'S OBJECTIVE & DURATION,AND THE EXPATRIATE ASSISTANCE REQUIRED. IF THE REQUEST IS FOR A STUDY FOR A PROJECT WHICH AID IS NOT LIKELY TO FINANCE,THE AGENT(MINISTRY)WILL BE REQUIRED TO JUSTIFY AID'S FINANCING THE STUDY,IDENTIFY POTENTIAL SOURCES OF FINANCING FOR IMPLEMENTATION OF THE FUTURE

WHEN POSSIBLE,THE PROJ'S SCOPE-OF-WORK, AFTER A PROPOSED STUDY IS ACCEPTED BY AID/W,THE IMPLEMENTING AGENT WILL RECEIVE GRANT FUNDS WHICH IT WILL USE TO CONTRACT(WITH AID APPROVAL)PROPER US CONSULTING SERVICES. US CONSULTANTS WILL WORK DIRECTLY WITH COUNTERPARTS IN BDG AGENCIES IN THE EXECUTION OF THESE STUDIES,OR WHERE NO APPROPRIATE BDG AGENCY EXISTS FOR TE STUDY,WITH LOCAL CONSULTANT ORGANIZATIONS IN A JOINT-VENTURE OR SUB-CONTRACTUAL ARRANGEMENT. GRANT FUNDS WILL COVER ALL COSTS DIRECTLY INCURRED BY THE CONSULTANTS,INCLUDING EXPENSES FOR COMMODITIES AND LOCAL PERSONNEL & CONSULTANTS NEEDED FOR IMPLEMENTATION OF THE STUDY. A SMALL PORTION OF THE GRANT WILL BE USED TO PROVIDE US OR THIRD-COUNTRY TRAINING TO COUNTERPART PERSONNEL IN INSTANCES WHERE SUCH TRNG WOULD BE SUPPORTIVE OF THE IMPLEMENTATION OF THE STUDY OR THE FUTURE PROJECT.

LIKELY STUDIES FOR FINANCING INCLUDE FERTILIZER DISTRIBUTION,PRODUCTION,STORAGE & MARKETING; PESTICIDE STORAGE; BANGLADESH COASTAL EMBANKMENTS CONSTRUCTION; AND COASTAL WATER MANAGEMENT AND AGRICULTURAL IMPROVEMENT.

GOAL: SUCCESSFUL IMPLEMENTATION OF HIGH PRIORITY DEVELOPMENT PROJECCTS IN AGRICULTURE, RURAL DEVELOPMENT, AND CLOSELY RELATED AREAS.

PURPOSE: IDENTIFY, ANALYZE, AND PREPARE FOR IMPLEMENTATION, HIGH PRIORITY DEVELOPMENT PROJECTS IN AGRICULTURE, RURAL DEVELOPMENT, AND CLOSELY RELATED AREAS.

OUTPUTS: 1. SCOPE OF WORK FOR PROJECT STUDIES DRAFTED. 2. CONSULTANTS SELECTED AND CONTRACTS SIGNED. 3. LOGICAL AND TECHNICAL SUPPORT FOR CONSULTANTS PROVIDED.

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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUROEAU: BANGLADESH                               PROJECT: 3880002
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* TITLE: DEVELOPMENT SERVICES TRNG.                INITIAL FY: 74    FINAL FY: 79
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DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: DEVELOPMENT AND SERVICES AND TRAINING
 AUTHOR: GARMS, DAVID G

PUBLICATION DATE: 08/27/75
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000200

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: DEVELOPMENT SERVICES AND TRAINING
 AUTHOR: KURLAND, BERT

PUBLICATION DATE: 04/05/77
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000200

ABSTRACT: 3/76-4/77. PROJECT PROGRESSING AS PLANNED. SOME DELAYS IN PROVIDING NOMINATIONS FOR TRAINING.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: DEVELOPMENT SERVICES AND TRAINING (6/28/78)
 AUTHOR: SULLIVAN, MICHAEL

PUBLICATION DATE: 08/07/78
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000200

ABSTRACT:

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* EVALUATION DOCUMENTATION
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* COUNTRY/BUREAU: BANGLADESH PROJECT: 3880003
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* TITLE: AGRICULTURAL RESEARCH INITIAL FY: 76 FINAL FY: 82
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DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: AGRICULTURAL RESEARCH
 AUTHOR: RADI,ARNOLD

PUBLICATION DATE: 02/22/78
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000300

ABSTRACT:

5/76 - 2/78. THE PROJECT IS APPROXIMATELY ONE YEAR BEHIND SCHEDULE BECAUSE OF: 1. DELAYS IN SIGNING THE A&E CONTRACT WITH A LOCAL FIRM AND SLOW CONSTRUCTION; 2. AID/W DELAYS IN SIGNING A TECHNICAL ASSISTANCE CONTRACT; AND 3. LACK OF COORDINATION WITH THE BANGLADESH GOVERNMENT (BDG). THE MAJOR PROBLEMS APPEAR TO BE RESOLVED NOW. SIX OF THE EXPECTED NINE PH.D. CANDIDATES HAVE BEGUN THEIR PROGRAMS. PLACING SHORT-TERM TRAINEES IN THE PHILIPPINES AND INDIA HAS BEEN DIFFICULT AND ALTERNATE TRAINING SITES ARE BEING SOUGHT. IT APPEARS THAT THE AGRICULTURAL RESEARCH INSTITUTE (BARI) WILL PROVIDE AN EFFECTIVE MEANS OF DEVELOPING IMPROVED VARIETIES OF A WIDE RANGE OF CROPS. CONSIDERABLE PROGRESS HAS BEEN MADE TOWARDS THE PROJECT'S GOAL (YEAR ROUND CROPPING OF NON-RICE CROPS WHEN RICE FARMING IS NOT POSSIBLE). PROGRESS IS ESPECIALLY NOTICEABLE IN RELATION TO WHEAT. 450,000 TO 500,000 ACRES ARE UNDER WHEAT CULTIVATION THIS WINTER SEASON. PROGRESS IS DUE TO BDG, UNICEF, AND USAID SMALL SCALE IRRIGATION PROJECTS, INCREASED AVAILABILITY OF BETTER QUALITY SEEDS AND OTHER INPUTS, BDG EXTENSION ACTIVITIES, VARIOUS SMALL PVO PROJECTS AND, MOST IMPORTANTLY, THE SPREAD EFFECTS OF SUCCESSFUL TRIALS BY FARMERS IN DIFFERENT AREAS OF THE COUNTRY.

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DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: PROJECT EVALUATION SUMMARY FOR PROJECT STUDIES
 GRANT (388-0008)

PUBLICATION DATE: 06/12/78
 DIC REFERENCE CENTER NUMBER:

AUTHOR:

ORGANIZATION: AID/W

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000300

ABSTRACT:

EVALUATES AGRICULTURAL RESEARCH PROJECT IN BANGLADESH AS OF 4/12/78. PROJECT PURPOSE WAS TO ESTABLISH AN INSTITUTIONAL FRAMEWORK CAPABLE OF HIGH PRIORITY RESEARCH (BIOLOGICAL AND ECONOMIC) WHICH WILL SUPPLY INFORMATION FOR SIGNIFICANT CROP DIVERSIFICATION (WHEAT, PULSES, VEGETABLES, OILSEEDS, AND CROPPING SYSTEMS). EVALUATION BASED ON MISSION INPUTS. ALTHOUGH PROJECT WAS EFFECTIVELY COMPLETED AND 6 OF 12 SCHEDULED STUDIES WERE CONDUCTED, MOST PROJECT ACTIVITIES WERE DISAPPOINTING. WHILE ALL 12 SCHEDULED STUDIES WERE EXPECTED TO PRODUCE AN AID-SUPPORTED PROJECT, ONLY ONE SUCH PROJECT RESULTED (RURAL ELECTRIFICATION). THE MAIN REASONS THAT FURTHER SECTOR DEVELOPMENT DID NOT OCCUR WERE THE DETERMINATION THAT SUCH ACTIVITY WAS UNNECESSARY AND THE FAILURE TO ASSESS GOVERNMENT OF BANGLADESH (BDG)'S ABILITY TO EXECUTE PROJECTS (BDG WAS INCAPABLE OF DEVELOPING PROJECT ACTIVITIES OR CONTRACTING OUTSIDE ASSISTANCE). THIS LACK OF BDG SUPPORT NECESSITATED USAID TO TAKE OVER PROJECT OPERATIONS AND ELIMINATED OPPORTUNITIES TO UPGRADE BDG PERSONNEL EXPERIENCES. FURTHER, IT HAS BEEN IMPOSSIBLE TO MEASURE GOAL ACHIEVEMENT SINCE PROJECT DID NOT CONTRIBUTE TO THE ATTAINMENT OF PROJECT TARGETS AND HAD UNREALISTIC SECTOR GOALS. PROJECT REVEALS THAT BDG HAS IMPROVED ITS CAPABILITY TO: CONDUCT CONTRACTING PROCEDURES; MONITOR HOST COUNTRY CONTRACTS; AND IDENTIFY, ANALYZE, AND PREPARE FOR HIGH PRIORITY IMPLEMENTATION DEVELOPMENT

AGRICULTURE AND RURAL DEVELOPMENT. BDG HAS NOT, HOWEVER OBTAINED THE TECHNICAL SKILLS NECESSARY TO INDEPENDENTLY CONDUCT RESEARCH OR TO FINALIZE MOST COUNTRY CONTRACTS. RECOMMENDATIONS ARE THAT FUTURE BDG PROJECTS BE NEGOTIATED TO PROVIDE BDG PERSONNEL WITH PROJECT DEVELOPMENT SKILLS. BDG PERSONNEL SKILLS SHOULD BE UPGRADED BY EXPECTING BDG STAFF TO ASSUME GREATER RESPONSIBILITY WHILE UNDER CLOSE USAID SUPERVISION.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
TITLE: AGRICULTURAL RESEARCH
AUTHOR: BADRUDDOZA, K B
BONKOWSKI, L
RADI, ARNOLD
SULLIVAN, MICHAEL

PUBLICATION DATE: 05/30/79
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000300

ABSTRACT: EVALUATES AGRICULTURAL RESEARCH PROJECT IN BANGLADESH FROM 3/78-5/79. PROJECT PURPOSE WAS TO ESTABLISH AN INSTITUTIONAL FRAMEWORK CAPABLE OF HIGH PRIORITY RESEARCH (BIOLOGICAL AND ECONOMIC) WHICH WOULD SUPPLY INFORMATION FOR SIGNIFICANT CROP DIVERSIFICATION (WHEAT, PULSES, VEGETABLES, OILSEEDS, AND CROPPING SYSTEMS). EVALUATION BASED ON ON-SITE OBSERVATIONS AND INTERVIEWS.
PROJECT HAS PROGRESSED SATISFACTORILY. MAJOR COMPONENTS ARE NEARING COMPLETION AND LAB EQUIPMENT IS BEING INSTALLED. A VERTEBRATE PEST SPECIALIST HAS BEEN EFFECTIVE IN ESTABLISHING A RODENT CONTROL PROGRAM. DESPITE DELAYS IN FILLING STAFF POSITIONS, OTHER TEAM MEMBERS HAVE BEEN ABLE TO COVER UNFILLED WORK ASSIGNMENTS SO THAT THE PROJECT HAS NOT BEEN DELAYED. EIGHT OFFICIALS HAVE COMPLETED SHORT-TERM TRAINING WHILE ANOTHER 8 PHD/MS CANDIDATES ARE IN TRAINING. FARMER'S FIELD DAYS ARE BEING HELD REGULARLY AT REGIONAL STATIONS. GOVT OF BANGLADESH (BDG) HAS SUPPORTED AND STAFFED AN AGRICULTURAL RESEARCH SYSTEM FOCUSING ON NON-RICE CROPS AND CROPPING SYSTEMS. BDG HAS COMPLETED REQUIRED REPORTS & INCREASED ITS QUALIFIED STAFF - LABS AT JOYDEVPUS HAVE BEEN ADEQUATELY FURNISHED & ADMINISTRATIVELY HAVE ACHIEVED COMPLETE INDEPENDENCE. HOUSING UNITS & FARM BUILDINGS HAVE BEEN COMPLETED. SIXTY ACRES OF RESEARCH PLOTS HAVE BEEN LEVELED & 300,000 ACRES OF FORMERLY FALLOW LAND ARE NOW UNDER VEGETABLE, PULSE, & OILSEED CULTIVATION. WHEAT ACREAGE HAS INCREASED FROM 250,000-300,000 ACRES & 2 NEW WHEAT VARIETIES HAVE BEEN ADOPTED. OTHER CROPS ADDED ARE SUMMER CABBAGE, DISEASE RESISTANT TOMATOES & 2 IMPROVED OILSEED VARIETIES. ORDINANCES HAVE BEEN REVISED GIVING BDG GREATER POWER OVER THE AGRICULTURAL RESEARCH SECTOR. FINALLY, A REPORT ON STRENGTHENING THE AGRICULTURAL RESEARCH SYSTEM WAS COMPLETED 4/79.
ALTHOUGH PROJECT IS NOW PROGRESSING, STAFF VACANCIES AND LACK OF TRAINING PROGRAMS SLOWED INITIAL PROGRESS & NECESSITATED REVISION OF THE IMPLEMENTATION PLAN.
TEAM RECOMMENDS PROJECT BE EXTENDED AND THE 3 RESEARCH INSTITUTIONS AT JOYDEVPUS ESTABLISH ADMINISTRATIVE OFFICE HEADED BY A DIRECTOR-GENERAL TO COORDINATE PROJECT AND SITE DEVELOPMENTS.

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*                               EVALUATION DOCUMENTATION                               *
*                               *                                                       *
* COUNTRY/BUREAU: BANGLADESH      PROJECT: 3880008                                *
*                               *                                                       *
* TITLE: PROJECT STUDIES          INITIAL FY: 74   FINAL FY: 79                    *
*                               *                                                       *
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DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: PROJECT STUDIES
 AUTHOR: BRENNAN, DEAN J

PUBLICATION DATE: 08/25/75
 DDC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000800

ABSTRACT: EVALUATES PROJECT PERFORMANCE FOR THE PERIOD 6/1/74-6/1/75, BANGLADESH. PURPOSE OF PROJECT WAS TO CONDUCT FEASIBILITY STUDIES FOR POSSIBLE FUTURE PROJECTS IN THE AGRICULTURAL AND RURAL DEVELOPMENT SECTORS. NO GRANT FUNDS WERE DISBURSED DURING THIS EVALUATION PERIOD DUE TO THE BDG'S INABILITY TO MEET THE MAJOR CONDITION PRECEDENT TO RELEASE OF FUNDS, IF, THE DEVELOPMENT OF A PROGRAM PLAN OF STUDIES ACCEPTABLE TO USAID. IT APPEARED THAT USAID WOULD HAVE TO PROVIDE 3 MAN-MONTHS OF TECHNICAL ASSISTANCE PER STUDY FOR THE DRAFTING OF SCOPES OF WORK AND COORDINATION OF CONSULTANTS FOR EACH STUDY. THIS WOULD BE DONE IN LIEU OF THE SUBMISSION OF A PROGRAM PLAN. IT IS SUGGESTED THAT A SPECIAL EVALUATION BE CONDUCTED IN 6 MONTHS TO DETERMINE WHETHER AN EXTENSION TO THE PROJECT COMPLETION DATE WOULD BE NECESSARY.

DOCUMENT TYPE: PROJECT EVALUATION SUMMARY
 TITLE: PROJECT STUDIES
 AUTHOR: BRENNAN, D

PUBLICATION DATE: 06/08/76
 DDC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID, BANGLADESH

PROJECTS (AND SUB-PROJECTS) EVALUATED: 388000800

ABSTRACT: EVALUATED PROJECT PERFORMANCE FOR THE PERIOD 6/1/75-3/25/76, BANGLADESH. PURPOSE OF PROJECT WAS TO CONDUCT FEASIBILITY STUDIES FOR POSSIBLE FUTURE PROJECTS IN THE AGRICULTURAL AND RURAL DEVELOPMENT SECTORS. DURING THIS EVAL PERIOD, 4 PROJECT STUDIES WERE DEVELOPED, BUT THE PRIMARY DRAFTING WAS DONE BY USAID AND SUBSEQUENTLY CLEARED BY THE BDG. THE ORIGINAL PROJECT DESIGN CALLED FOR THE SUBMISSION OF 12-15 STUDY PROPOSALS BY THE BDG, OUT OF WHICH 6 WOULD BE SELECTED FOR FUNDING. THE FOUR THAT WERE DEVELOPED INCLUDED A KURIGRAM REGIONAL DEVELOPMENT STUDY, PILOT RURAL WORKS PROJ, RURAL ELECTRIFICATION STUDY, AND A FOODGRAIN WAREHOUSE STUDY. THE KURIGRAM STUDY WAS COMPLETED, BUT BECAUSE OF POLICY DIFFERENCES WITH THE BDG OVER THE PROPOSED PROJECT, USAID DECIDED NOT TO PROCEED WITH THE PROJECT. THE PILOT RURAL WORKS PROJECT WAS NEARLY COMPLETED BUT IT APPEARED THAT TECHNICAL AND MANAGERIAL DIFFICULTIES AFFECTING IMPLEMENTATION OF THE PILOT WOULD PRECLUDE AID FINANCING FOR THIS PROJECT. THE RURAL ELECTRIFICATION AND FOODGRAIN WAREHOUSE STUDIES HAD NOT BEEN IMPLEMENTED AT THE TIME OF THIS EVALUATION. CHANGES IN PROJECT DESIGN IMPLEMENTED DURING THIS PERIOD WERE: 1) USAID ASSUMED THE RESPONSIBILITY FOR CONTRACTING PROJECT CONSULTANTS AND COORDINATING TECHNICAL ASSISTANCE; 2) THE SUBMISSION OF A PROGRAM PLAN BY THE BDG WOULD NO LONGER BE CONSIDERED AS A CONDITION PRECEDENT TO RECEIPT OF GRANT FUNDS.

Appendix B.4

**South Korea: Project Design Information and Evaluation Documentation
from AID/DS/DIU Data Systems**

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 * COUNTRY/BUREAU: KOREA, REPUBLIC OF PROJECT: 4890594 SUB-PROJECT: 01 *
 * TITLE: RURAL POLICY PLAN & SURVEY INITIAL FY: 63 FINAL FY: 74 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 6,000 *

PROBLEM: ROKG AGRICULTURAL AGENCIES LACK PLANNING, ORGANIZATIONAL AND RESEARCH SKILL TO MAKE FULL USE OF AVAILABLE RESOURCES. (ROKG-REPUBLIC OF KOREA GOVERNMENT). STRATEGY: INCREASE OUTPUT OF EXISTING RESOURCES.

SUMMARY: USAID IS PROVIDING TECHNICAL ASSISTANCE, RESEARCH AND PARTICIPANT TRAINING TO ROKG IN AN OMNIBUS PROJECT DESIGNED TO CONSOLIDATE AND UPGRADE THE AGRICULTURAL AGENCIES AND TO INTENSIFY PRODUCTION ON LAND CURRENTLY USED. ORD AND COA ARE EVALUATING AND CONDUCTING RESEARCH. A SECTOR ANALYSIS IS BEING DONE. A SUBSIDY IS MAKING MUCH-NEEDED LIME AVAILABLE TO THE KOREAN FARMERS. FERTILIZER AND IRRIGATION WILL BE PROVIDED AS NEEDED. CO-OPS ARE BEING PROMOTED. A PASTURELAND IMPROVEMENT PROGRAM WILL COMMENCE A BROADER LIVESTOCK PROGRAM. AN ATTEMPT WILL ALSO BE MADE TO GENERALLY IMPROVE THE RURAL ENVIRONMENT.

GOAL: MORE RAPID GROWTH IN THE RURAL SECTOR THROUGH MORE PRODUCTIVE USE OF AGRICULTURAL RESOURCES. I PURPOSE: IMPROVED AGRICULTURAL PLANNING, PROGRAMS AND USE OF RESOURCES. I

OUTPUTS: AGRICULTURAL PRICE POLICY, EFFECTIVE PRODUCTION PROGRAMS AT PROVINCIAL LEVEL; IRRIGATION/LAND DEVELOPMENT/FERTILIZER PROGRAM; INCREASED GRAIN PRODUCTION; IMPROVED RESEARCH ESPECIALLY ADMINISTRATION AND COORDINATION; INCREASED FARM MECHANIZATION. A SINGLE FUNCTIONAL UNIT IN MINISTRY OF AGRICULTURE AND FORESTRY WITH TECHNICAL CAPABILITY FOR NATIONAL PLANNING/POLICY. ENLARGED AGRICULTURAL ECONOMIC RESEARCH INSTITUTE. TRAINED STAFF. RURAL INCOME POLICY. I

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 * COUNTRY/BUREAU: KOREA, REPUBLIC OF PROJECT: 4890705 SUB-PROJECT: 00 *
 * TITLE: KOREA: AGRICULTURAL RESEARCH PROJECT INITIAL FY: 74 FINAL FY: 80 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 5,000 *

PROBLEM: RURAL/AGRICULTURAL DEVELOPMENT & ECONOMIC GROWTH RESTRAINED BY LACK OF APPROPRIATE COMMODITIES & TECHNICAL & CAPITAL RESOURCES. STRATEGY: PROVIDE CAPITAL RESOURCES AND RESEARCH FACILITIES; TRAIN EXPERTS; DISSEMINATE RESULTS TO SCIENTISTS AND FARMERS.

SUMMARY: TECHNICAL, COMMODITY AND CAPITAL RESOURCES SUPPORT RESEARCH AND DEVELOPMENT PROGRAMS AIMED AT INCREASING BASIC CROP YIELDS, INTRODUCING ALTERNATIVE AND VARIETY CROPS AND IMPROVING LAND UTILIZATION. INDIGENOUS AGRICULTURAL CAPACITY IS STRENGTHENED BY TRAINING OF PERSONNEL AND ESTABLISHMENT OF RESEARCH FACILITIES.

GOAL: INCREASE FOOD PRODUCTION, PER CAPITA INCOME, EMPLOYMENT IN KOREA. I PURPOSE: IMPROVE BASIS CROP YIELDS, CROPPING SYSTEMS AND LAND UTILIZATION. I

OUTPUTS: MULTIDISCIPLINARY RESEARCH AND TRAINING PROGRAMS ESTABLISHED; IMPROVED RICE, SOYBEANS, BARLEY, WHEAT, FORAGE, POTATOES AND LIVESTOCK/CROP PRODUCTION SYSTEMS; RESEARCH OUTPUT DISSEMINATED TO FARMERS; IMPROVED PROCESSING AND DISTRIBUTION OF SEEDS; FIELD TRIALS OF FOOD GRAINS; MAINTENANCE OF INTERNATIONAL LINKAGES. I

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* EVALUATION DOCUMENTATION *
* COUNTRY/BUREAU: KOREA, REPUBLIC OF PROJECT: 4890594 *
* TITLE: RURAL POLICY PLANNING AND SURVEY INITIAL FY: 63 FINAL FY: 74 *
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DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: RURAL DEVELOPMENT POLICY PLANNING AND SURVEY
PROJECT IN KOREA.
AUTHOR: BROADNAX, MADISON
CLAPP, LESTER E
ERIKSON, JOHN H
FRANKLIN, ALEX W; ET AL

PUBLICATION DATE:
DIC REFERENCE CENTER NUMBER: KS630.95195K84C
ORGANIZATION: USAID/KOREA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 489059400

ABSTRACT: END OF TOUR REPORT ON RURAL DEVELOPMENT POLICY PLANNING AND SURVEY PROJECT IN KOREA. NINETEEN CONTRIBUTORS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: RURAL POLICY PLANNING AND DEVELOPMENT
AUTHOR:

PUBLICATION DATE: 01/19/71
DIC REFERENCE CENTER NUMBER: AID/89-3-342 & 343
ORGANIZATION: USAID/KOREA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 489059402 489059401

ABSTRACT:

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*                               EVALUATION DOCUMENTATION                               *
*                               *                                                       *
* COUNTRY/BUREAU: KOREA, REPUBLIC OF                PROJECT: 4890685                *
*                               *                                                       *
* TITLE: AGRICULTURAL PLANNING                     INITIAL FY: 72    FINAL FY: 79    *
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: AGRICULTURAL PLANNING
 AUTHOR: JONES, FRANCIS C

PUBLICATION DATE: 06/27/73
 DIC REFERENCE CENTER NUMBER: AID/EAD-157
 ORGANIZATION: USAID/KGREA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 489068500

ABSTRACT: EVALUATES PROJECT PERFORMANCE FOR THE PERIOD 7/1/72-6/30/73, KOREA. PROJECT WAS INTENDED TO ESTABLISH MORE COOPERATIVE AND EFFECTIVELY MANAGED RESEARCH AND TRAINING PROGRAMS AT THE OFFICE OF RURAL DEVELOPMENT (ORD) AND SEOUL NATIONAL UNIVERSITY, COLLEGE OF AGRICULTURE (COA). THE PROJECT CONTRACTOR, THE INTERNATIONAL AGRICULTURAL DEVELOPMENT COUNCIL FOR NEW ENGLAND COLLEGES OF AGRICULTURE (ADC), DEvised 28 RECOMMENDATIONS FOR INCREASING COA/ORD COORDINATION AND COLLABORATION, AND IMPROVING TRAINING AT COA FOR ORD RESEARCHERS. ADC WAS ABLE TO EFFECT SOME CHANGES DURING THE RELATIVELY SHORT TIME PERIOD IT HAS BEEN ON BOARD (21 MOS). THE CONTRACTOR ALSO DID AN OUTSTANDING JOB OF TAILORING PARTICIPANT TRAINING PROGRAMS TO THE REQUIREMENTS OF SELECTED INDIVIDUALS AND, IN SOME CASES, WAS ABLE TO PERSUADE INVOLVED US UNIVERSITIES TO WAIVE FEES AND/OR GRANT ASSISTANTSHIPS. THE QUALITY OF COUNTERPART PERSONNEL WAS EXCELLENT; SUPPORT PERSONNEL WERE LIKEWISE WELL-QUALIFIED.

THE PROJECT APPEARED TO BE ACHIEVING ITS INTENDED TARGETS. AS EVIDENCE OF INCREASED COOPERATION BETWEEN COA & ORD: 1) JOINT APPOINTMENTS TOTALLED 55; 2) 12 COA PROFESSORS WERE ENGAGED IN COMMON RESEARCH WITH ORD; 3) JOINT TRAINING PROGRAMS WERE PLANNED & APPROVED; 4) COA WAS USING ORD'S COMPUTER; COA & ORD WERE USING EACH OTHER'S LIBRARY; PLANS WERE BEING DEVELOPED FOR JOINT USE OF CERTAIN TYPES OF EQUIPMENT AND A REPAIR CENTER. THE BETTER MANAGEMENT OF RESEARCH AND TRAINING PROGRAM WAS EVIDENCED BY THE INCREASED NUMBER OF ORD & COA PERSONNEL STUDYING FOR ADVANCED DEGREES AND THE INSTALLATION OF NEW RESEARCH REVIEW & EVALUATION PROCEDURES. IN SUPPORT OF THIS PROJECT, A PRESIDENTIAL DECREE WAS ISSUED WHICH PROVIDES FOR THE ESTABLISHMENT OF NATIONAL AND PROVINCIAL AGRICULTURAL RESEARCH AND TRAINING COORDINATING COMMITTEES.

Appendix B.5:

**India: Project Design Information and Evaluation Documentation
from AID/DS/DIU Data Systems**

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 * COUNTRY/BUREAU: INDIA PROJECT: 3860281 SUB-PROJECT: 00 *
 * TITLE: AGRICULTURAL UNIVERSITIES DEVELOPMENT INITIAL FY: 63 FINAL FY: 77 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): *

PROBLEM: AGRICULTURAL UNIVERSITIES OFTEN UNRESPONSIVE TO FARMERS' NEEDS AND ACTUAL FIELD SITUATIONS. SEPARATE COLLEGES WITHIN SINGLE UNIVERSITY NOT ALWAYS COHESIVE. TO SUSTAIN HIGH RATE OF GROWTH IN AGRICULTURE NEW TECHNOLOGY ADAPTED TO LOCAL CONDITIONS IS NEEDED. THIS REQUIRES EXPANSION OF NUMBER OF PEOPLE TRAINED IN AGRICULTURAL SERVICES.

STRATEGY: AMERICAN ADVISORS FROM US LAND GRANT UNIVERSITIES ASSIST INDIAN AGRICULTURAL UNIVERSITIES DEVELOP CAPACITY TO PLAN, ADMINISTER FULLY-INTEGRATED STATEWIDE PROGRAMS IN TEACHING, RESEARCH, EXTENSION.

SUMMARY: PROJECT ASSISTS IN AGRICULTURAL UNIVERSITIES TO DEVELOP STAFF, ADMINISTRATION, FACILITIES AND VARIOUS TEACHING, RESEARCH, AND EXTENSION PROGRAMS TO SERVE ENTIRE STATES THROUGH SINGLE, COORDINATED INTEGRATED SYSTEM, MODELED AFTER US LAND GRANT UNIVERSITIES. US SPECIALISTS PARTICIPATE ACTIVELY IN TEACHING, EXTENSION, RESEARCH, AND RENDER ADVISORY SERVICES IN ADMINISTRATIVE, PROFESSIONAL AREAS. ADVANCED TRAINING IN US AND EQUIPMENT, BOOKS ARE PROVIDED. TEACHING PROGRAMS, CURRICULA ARE DEVELOPED AND TEACHING SEMINARS, WORKSHOPS SPONSORED. EACH TEAM OF US TECHNICIANS IS TAILORED TO NEEDS OF INDIAN UNIVERSITY. PROJECT ATTEMPTS TO INTEGRATE STATE AND UNIVERSITY RESEARCH PROGRAMS AND ORIENT THEM TOWARD PROBLEM-SOLVING.

GOAL: PROVIDE CONDITIONS NECESSARY FOR SUSTAINED INCREASE IN AGRICULTURAL PRODUCTION OF ABOUT 5% PER ANNUM.

PURPOSE: ESTABLISH AND DEVELOP SERVICE-ORIENTED AGRICULTURAL UNIVERSITIES IN 11 INDIAN STATES.

OUTPUTS: PARTICIPANTS TRAINED; FACILITIES IMPROVED; STAFF UPGRADED; GRADUATES INCREASED, ORIENTED TOWARD PROBLEM-SOLVING; RESEARCH PROJECTS SUPPORTED; EXTENSION PROGRAMS UNDERTAKEN; LONG-RANGE PLANS FORMULATED; TRUST FUND RUPEE PROJECTS CONDUCTED; CURRICULUM MADE RELEVANT; ADMINISTRATION MADE MORE EFFECTIVE; UNIVERSITY PROGRAM MADE RESPONSIVE TO STATE NEEDS; EXTENSION, RESEARCH, TEACHING INTEGRATED ON DEPARTMENT LEVEL.

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 * COUNTRY/BUREAU: INDIA PROJECT: 3860366 SUB-PROJECT: 00 *
 * TITLE: AGRICULTURAL PRODUCTION INITIAL FY: 66 FINAL FY: 77 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): *

PROBLEM: INTRODUCTION OF HIGH-YIELD FOODGRAIN VARIETIES AND ASSOCIATED INPUTS CREATES NEW TECHNICAL AND PRODUCTION PROBLEMS OF PROPER PRACTICES TO OBTAIN MAXIMUM RESULTS. SPECIFIC PROBLEMS INCLUDE PEST CONTROL, FERTILIZER AND FARM IMPLEMENT USE, CROPPING, FARM AND WATER MANAGEMENT, SEED PRODUCTION.

STRATEGY: BY ORIENTING AGRICULTURAL RESEARCH PROGRAM TOWARD PROBLEMS RETARDING FOODGRAIN PRODUCTION AND BY INSTITUTIONALIZING PATTERN OF COOPERATION BETWEEN EXTENSION AND RESEARCH SERVICES, PROJECT CREATES LONG-RANGE PROBLEM-SOLVING CAPACITY TO INCREASE AGRICULTURAL PRODUCTION IN ORISSA.

SUMMARY: PROJECT PROVIDES FOR FIELD PROBLEM UNITS (FPUS) COMPRISED OF 1 US AND 2 INDIAN AG SPECIALISTS TO FOCUS ON PROBLEMS CREATED BY HIGH-YIELD FOODGRAIN IN 7 STATES. SUBJECT MATTER SPECIALTIES OF US EXPERTS DETERMINED BY STATE NEEDS. FPUS DEVELOP AND IMPLEMENT ACTIVITIES FOR RECOGNITION OF PROBLEMS, DISCOVERY OF SOLUTIONS, EXTENSION OF TECHNOLOGY TO FARMER. AUDIO-VISUAL VANS, INPUT KITS, BULLETINS, FIELD DEMONSTRATIONS DISSEMINATE FINDINGS TO FARMER. FPUS ESTABLISH CLOSE COMMUNICATIONS AMONG STAFF OF DEPT OF AGRICULTURE, UNIVERSITY, COMMERCIAL COMPANIES. HIGH-LEVEL COORDINATING COMMITTEE SETS POLICY, REVIEWS ACTIVITIES, DEVELOPS COORDINATION AMONG FPUS, RESEARCH, EXTENSION. INDIAN STAFF AND RESEARCHERS TRAINED.

GOAL: CONTINUE RAPID GROWTH OF AGRICULTURAL PRODUCTION IN INDIA.

PURPOSE: CONTINUE IDENTIFICATION AND SOLUTION OF PRODUCTION PROBLEMS RESULTING FROM INTRODUCTION OF HIGH YIELDING VARIETIES AND ASSOCIATED INPUTS AND FARM-LEVEL ADOPTION OF RECOMMENDED PRACTICES.

OUTPUTS: 1. 32 FIELD PROBLEM UNITS (FPUS) CREATED IN SEVEN STATES IN SPECIALTY AREAS: SEED PROT, SOIL FERT, FARM MGMT, ETC. 2. RESEARCH INSTITUTE CARRIED OUT ADAPTIVE RESEARCH DIRECTED TOWARD SOLVING PRODUCTION PROBLEMS. 3. FIELD TESTING AND DOMONSTRATION. 4. HIGH-LEVEL COORDINATION OF PROGRAM. 5. TRAINING PROGRAM FOR INDIAN PERSONNEL.

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* COUNTRY/BUREAU: INDIA PROJECT: 3860368 SUB-PROJECT: 03 *
* TITLE: SOIL AND WATER MANAGEMENT INITIAL FY: 66 FINAL FY: 75 *
* ESTIMATED AMOUNT AUTHORIZED($000): 464 *
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PROBLEM: THE EXISTING STRUCTURE OF WATER RESOURCE ADMINISTRATION COUPLED WITH THE SMALL FARM UNITS AND FRAGMENTED HOLDINGS OF THE FARMERS GREATLY COMPLICATES THE PROBLEM OF AGRICULTURAL WATER MANAGEMENT.

STRATEGY: PROVIDE TECHNICAL ASSISTANCE TO COLLECT, ANALYZE DATA AND CREATE MODEL.

SUMMARY: COLLECT RESEARCH, FARM SURVEY AND CENSUS TYPE DATA AS AMY BE AVAILABLE FOR THE CREATION OF TWO-FOLD ANALYTICAL MODEL WHICH IS DESIGNED TO PROVIDE INFORMATION ON AGRICULTURAL PRODUCTION WHICH MIGHT BE OBTAINED WITH DIFFERENT WATER SUPPLY PATTERN/DISTRIBUTION ALTERNATIVES. OPTIMUM TIMING AND AMOUNTS FOR IRRIGATION ARE ASSESSED. FERTILIZER RESPONSE AND CROPPING INTENSITY ASSESSED UNDER VARYING LEVELS OF IRRIGATION/RAINFALL.

GOAL: CONTINUING RAPID GROWTH IN AGRICULTURAL PRODUCTION IN INDIA. I

PURPOSE: TO EXPLORE OPPORTUNITIES FOR INCREASING INDIA'S AGRICULTURAL PRODUCTION THROUGH A BETTER UNDERSTANDING OF FACTUAL AND ANALYTICAL BASES NEEDED FOR MAKING POLICY AND OPERATIONAL DECISIONS. I

OUTPUTS: AN ANALYTICAL MODEL SIMULATING THE CONDITIONS OF IRRIGATED AGRICULTURE IN INDIA. I

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 * COUNTRY/BUREAU: INDIA PROJECT: 3860379 SUB-PROJECT: 00 *
 * TITLE: RICE RESEARCH IMPROVEMENT INITIAL FY: FINAL FY: *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): *

PROBLEM: AVERAGE RICE YIELDS IN INDIA HAVE REMAINED CONSTANT DESPITE SEVERAL YEARS OF CROP IMPROVEMENT RESEARCH. THIS IS DUE TO THE MAGNITUDE OF THE UNDERTAKING COUPLED WITH THE SPORADIC, UNCONCERTED NATURE OF THE RESEARCH EFFORTS. IN 1965, THE GOI INITIATED THE ALL-INDIA COORDINATED RICE IMPROVEMENT PROJECT (AICRIP) TO CENTRALIZE & FOCUS RICE RESEARCH ACTIVITIES. WHILE MAKING APPARENT PROGRESS, AICRIP NONETHELESS LACKS A CORE OF HIGHLY EXPERIENCED RESEARCHERS & ADMINISTRATORS WHO COULD PROVIDE EFFECTIVE INITIAL GUIDANCE & TRNG AND SECURE ITS VIABILITY.

STRATEGY: SEVEN YEAR PROJECT CONSISTING OF A GRANT PROVIDING TECHNICAL ASSISTANCE THROUGH CONTRACT PERSONNEL, OFFICE AND TECHNICAL EQUIPMENT, VEHICLES, PUBLICATIONS AND IN-COUNTRY & PARTICIPANT TRAINING TO DEVELOP A RICE RESEARCH INSTITUTION. HOST COUNTRY PROVIDES RESEARCH & TRAINING FACILITIES, OFFICE, LAB & FIELD EQUIPMENT, VEHICLES, OPERATIONAL PERSONNEL, AND LONG TERM MAINTENANCE.

SUMMARY:

GRANT TO THE GOVT OF INDIA TO ASSIST THE ALL-INDIA COORDINATED RICE IMPROVEMENT PROJECT (AICRIP) WITH ITS ORGANIZATIONAL AND RICE RESEARCH ACTIVITIES. PROJECT INTENDS TO ACCELERATE AND IMPROVE RICE RESEARCH IN INDIA BY STRENGTHENING THE OPERATIONS OF AICRIP AND THE RESEARCH CAPABILITIES OF RICE RESEARCH PERSONNEL. TO ACCOMPLISH THESE OBJECTIVES, PROJECT DOES THE FOLLOWING: 1. CONTRACTS 5 SPECIALISTS (PLANT PHYSIOLOGIST, AGRONOMIST, ENTOMOLOGIST, PLANT PATHOLOGIST, EXPERIMENTAL STATION DESIGN & LAYOUT SPECIALIST) FROM THE INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI) TO WORK WITH INDIAN AICRIP COUNTERPARTS AT THE AICRIP NATL HEADQUARTERS AND WITH AICRIP COOPERATORS THROUGHOUT THE COUNTRY; THESE ADVISORS AND COUNTERPARTS DESIGN AND CONDUCT FIELD EXPERIMENTS & LAB RESEARCH ON BREEDING TECHNIQUES, INSECT CONTROL, USE OF FERTILIZERS, PHYSIOLOGICAL FACTORS LENDING TO SPECIES VARIATIONS, AND FUNCTIONAL LAYOUT DESIGN. 2. CONTRACTS SHORT TERM IRRI CONSULTANTS TO ASSIST WITH URGENT, UNFORESEEN RESEARCH PROGRAM PROBLEMS. 3. ASSISTS WITH 2 NATL & 2 ZONAL TRAINING WORKSHOPS/YR. 4. FUNDS 20 VISITS BY IRRI & AICRIP SCIENTISTS TO STATE RESEARCH CENTERS EACH YEAR. 5. PUBLISHES PROGRESS REPORTS BY CROPPING SEASON AND DISTRIBUTES TO ALL CONCERNED SCIENTISTS. 6. ASSISTS WITH NATL & REGIONAL TRAINING PROGRAMS BY ARRANGING SELECTIVE TRAINING AT THE AICRIP HEADQUARTERS & INSTALLATIONS, AND THE IRRI. THE AID GRANT ALSO FUNDS OFFICE & TECH EQUIPMENT, VEHICLES AND PUBLICATIONS. THE GOI, THROUGH THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH, ALSO PROVIDES OFFICE & TECH EQUIPMENT, AND VEHICLES. ASSISTING THE AICRIP, BUT NOT DIRECTLY IN THIS PROJECT, ARE THE ROCKEFELLER FOUNDATION—SUPPLYING SIMILAR COMMODITIES, TEMPORARY TECHNICAL STAFF PLUS A CHIEF OF PARTY & JOINT AICRIP COORDINATOR, AND THE FORD FOUNDATION WHICH IS PROVIDING EQUIPMENT AND THE CONSTRUCTION OF A GREENHOUSE. PRIMARY BENEFICIARIES ARE INDIA'S FARMERS AND CONSUMERS WHO, BY THE SUCCESSFUL EFFORTS OF THE AICRIP, WILL RECEIVE IMPROVED AND HIGHER YIELD RICE VARIETIES.

GOAL: CONTINUED RAPID GROWTH IN AGRICULTURAL PRODUCTION IN INDIA.

PURPOSE: ESTABLISHMENT OF AN EFFECTIVE ALL-INDIA COORDINATED RICE IMPROVEMENT PROJECT (AICRIP) WITH AN ADEQUATE ORGANIZATION AND OPERATIONAL TECHNIQUES FOR COORDINATING RICE RESEARCH THROUGHOUT INDIA.

OUTPUTS: 1. HIGH YIELDING, HIGH QUALITY, DISEASE AND INSECT RESISTANT VARIETIES WITH WELL DEFINED PRACTICES FOR CULTIVATION. 2. NUMEROUS VARIETAL AGRONOMIC AND OTHER TRIALS TO IDENTIFY IMPROVED VARIETIES AND ASSOCIATE PACKAGES OF CULTURAL PRACTICES. 3. RICE RESEARCH SCIENTISTS WITH IMPROVED CAPABILITY AND WITH BROADENED KNOWLEDGE OF ADVANCED TECHNIQUES AND RESEARCH IN THEIR FIELD.

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* COUNTRY/BUREAU: INDIA PROJECT: 3860464 SUB-PROJECT: 00 *
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* TITLE: GUJARAT MEDIUM IRRIGATION INITIAL FY: 78 FINAL FY: 83
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* ESTIMATED AMOUNT AUTHORIZED(5000): 30,000
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PROBLEM: THE DEVELOPMENT OF SURFACE IRRIGATION FACILITIES IN THE INDIAN STATE OF GUJARAT HAS NOT KEPT PACE WITH THE DEVELOPMENT OF GROUNDWATER RESOURCES. WHILE GROUNDWATER RESOURCES HAVE BEEN DEVELOPED TO WITHIN 70% OF THE MAXIMUM POTENTIAL, ONLY 15% OF THE STATE'S CULTIVATED LAND IS BEING IRRIGATED GIVEN THE EXISTING FACILITIES COUPLED WITH THE LOW AND UNCERTAIN RAINFALL OF THE AREA HAS RESULTED IN GUJARAT BEING HIGHLY SUSCEPTIBLE TO DROUGHT AND, THEREFORE, FAMINE.

STRATEGY: FIVE-YEAR PROJECT CONSISTS OF A LOAN PROVIDING COMPLEMENTARY FUNDING SUPPORT FOR THE CONSTRUCTION/MODERNIZATION OF MEDIUM-SIZED IRRIGATION SYSTEMS. HOST COUNTRY PROVIDES COMPLEMENTARY FUNDING, AND OVERALL PROJECT PLANNING, IMPLEMENTATION, ADMINISTRATION. OTHER DONOR: IDA.

SUMMARY: LOAN TO THE GOVT OF INDIA COMPLEMENTS FUNDING PROVIDED BY THE GOI AND THE WORLD BANK/IDA FOR THE EXPANSION OF IRRIGATION SYSTEMS IN THE STATE OF GUJARAT. SPECIFICALLY, THIS PROJ WILL SUPPORT: 1) THE CONSTRUCTION OF APPROX 13 NEW MEDIUM IRRIG PROJECTS (MIP'S); 2) THE MODERNIZATION OF APPROX 20 EXISTING MIP'S; 3) THE ESTABLISHMENT OF A NETWORK OF AUTOMATIC DISCHARGING MEASURING STATIONS (FOR RIVER GAUGING); 4) THE IMPLEMENTATION OF EVALUATION STUDIES & PROJ MONITORING ACTIVITIES. MIP'S ARE SYSTEMS WHICH ENCOMPASS AN AREA OF 2000-30000 HECTARES. THE IRRIGATION WING OF THE GUJARAT PUBLIC WORKS DEPT (PWD) WILL BE RESPONSIBLE FOR THE PLANNING, IMPLEMENTING, OPERATION & MAINTENANCE OF THE MIP'S. INDIVIDUAL MIP PROPOSALS WILL BE SUBMITTED BY THE PWD TO THE GOI FOR APPROVAL & SUBSEQUENT FUNDING. FOR NEW MIP'S, THE FOLLOWING WORKS WILL BE CONSTRUCTED: AN EARTH FILL STORAGE DAM WITH GATED SPILLWAY, A FULLY-LINED CANAL NETWORK DELIVERING WATER THRU OUTLETS SERVING 8 HA BLOCKS AND A DRAINAGE NETWORK CONNECTED TO MAJOR NATURAL DRAINS. MIP MODERNIZATION WILL CONSIST OF: EXTENSION OF CANALS TO OUTLETS SERVING 8 HA BLOCKS, LINING OF THE ENTIRE CANAL SYS, CONSTRUCTION OF ADDITIONAL WATER CONTROL STRUCTURES & LOCAL DRAINAGE WORKS. A WORLD BANK-FINANCED CONSULTANT WILL ASSIST PWD IRRIG TECHNICIANS WITH THE INSTALLATION OF STREAM GAUGING & RIVER FLOW EQPMNT (COMPRISING THE AUTO DISCHARGE MEASURING SYS). THIS SYSTEM WILL PROVIDE THE IMPROVED HYDROLOGICAL DATA NECESSARY FOR PLANNING FUTURE MIP'S. INTEGRAL WITH THE DEVELOPMENT OF THE IRRIG SYSTEMS WILL BE THE INTRODUCTION & DEVELOPMENT OF IMPROVED FARMING SYSTEMS. PROJ WILL SUPPORT A SERIES OF STUDIES BY THE SARDAR PATEL UNIV IN GUJARAT WHICH WILL MONITOR & EVALUATE PROJ PROGRESS, IE, IMPROVEMENT OF THE AGRO-ECON STATUS OF THE PROJ AREA. STUDIES WILL FOCUS ON ON-FARM WATER MGMT, EMPLOYMENT & INCOME, LAND USE, CROPPING PATTERNS, DEMOGRAPHIC & SOCIAL CHARACTERISTICS, AGR PRODUCTION, MARKETING FACTORS, USE OF AGR INPUTS, AND AGR SUPPORT SERVICES (EXTENSION, RESRCH, STORAGE FACILS, ETC). THE GOI'S CENTRAL WATER COMMISSION WILL CLOSELY MONITOR PROJ EXECUTION.

GOAL: 1. INCREASE LEVEL & SECURITY OF SMALL FARMER INCOME. 2. EXPAND RURAL EMPLOYMENT OPPORTUNITIES. 3. INCREASED AVAILABILITY OF FOOD TO RURAL & URBAN POOR.

PURPOSE: 1. INCREASE FOOD PRODUCTION IN GUJARAT. 2. DECREASE THE RISK OF DROUGHT.

OUTPUTS: 1. INCREASED ACREAGE UNDER IRRIGATION IN THE STATE OF GUJARAT. 2. NEW MEDIUM IRRIGATION PROJECTS (MIP'S) CONSTRUCTED AND EXISTING MIP'S IMPROVED/MODERNIZED. 3. NETWORK OF AUTOMATIC DISCHARGING MEASURING STATIONS. 4. AGRICULTURAL PLANS FOR EACH MIP COMPLETED.

* COUNTRY/BUREAU: INDIA PROJECT: 3860465 SUB-PROJECT: 00 *
 * TITLE: APPLIC OF SCIENCE/TECH TO RURAL DEVEL INITIAL FY: 78 FINAL FY: 81 *
 * ESTIMATED AMOUNT AUTHORIZED(\$000): 2,000 *

PROBLEM: INDO/US SCIENTIFIC AND TECHNOLOGICAL COLLABORATION TO ASSIST RURAL DEVELOPMENT EFFORTS HAS BEEN HAMPERED IN RECENT YEARS DUE TO RESTRICTIONS PLACED ON FUNDS DISBURSEMENT BY SUPPORTING AGENCIES. INDIA'S POOREST RURAL POPULATION ESPECIALLY NEEDS NON-CONVENTIONAL ENERGY SOURCES TO INCREASE AGRICULTURAL PRODUCTIVITY AND EFFICIENCY AND TO REVERSE THE ENVIRONMENTAL IMPACT CAUSED BY THE RAPID DEFORESTATION REQUIRED TO SUPPLY FIREWOOD FOR COOKING AND HEATING.

STRATEGY: THREE-YEAR GRANT TO GOVT OF INDIA WILL SELECTIVELY SUPPORT INDO/US JOINT COMMISSION ACTIVITIES WHICH APPLY SCIENCE AND TECHNOLOGY TOWARDS UPGRADING THE LIVING STANDARDS AND PRODUCTIVITY OF INDIA'S POOREST RURAL POPULATION. ALTHOUGH AID WILL BE PRIMARY USG AGENCY INVOLVED IN IMPLEMENTING GRANT, USG TECHNICAL AGENCIES SUCH AS NSG, DOE, NASA, NBS, ARS/USDA, ETC, ARE ALSO ANTICIPATED AS PARTICIPANTS IN PROJECT. IMPLEMENTING AGENCY FOR GOI WILL BE THE DEPT OF SCIENCE & TECHNOLOGY.

SUMMARY: GRANT PROVIDED TO THE GOVT OF INDIA TO FINANCE A SERIES OF PROJECTS WHICH WILL DEVELOP, TEST, AND APPLY TECHNOLOGIES PERTAINING TO ALTERNATIVE ENERGY SOURCES, AGRICULTURE, CONSERVATION, NUTRITION, AND HEALTH. PROJECTS SELECTED FOR FUNDING WILL BE JUDGED USING THE FOLLOWING CRITERIA: RELEVANCE OF CONCERNED TECHNOLOGY TO IMMEDIATE PROBLEMS IN RURAL AREAS; RELATIVE COSTS AND BENEFITS; DIRECT VS INDIRECT COSTS AND BENEFITS; APPROPRIATENESS FOR IMPLEMENTATION OR DELIVERY; AND POTENTIAL FOR INCREASING THE INCOME OF THE RURAL POOR. SEVERAL PROJECTS HAVE BEEN PROPOSED FOR SUCH CONSIDERATION, INCLUDING RESEARCH ON SOLAR ENERGY UTILIZATION; DEVELOPMENT OF SOLAR THERMAL POWER PLANTS; FIELD TESTING AND DEMONSTRATION OF SOLAR CELLS FOR EDUCATIONAL PURPOSES AND FOR WATER PUMPING; HYDROPOWER; AND VILLAGE INDUSTRIAL DEVELOPMENT. (BRIEF DESCRIPTIONS OF THESE SAMPLE PROJECTS APPEAR IN ANNEXES A AND B TO THE PROJECT PAPER.) PROJECT WILL BE IMPLEMENTED IN PART BY THE INDO/US JOINT COMMISSION FOR INDO-US COOPERATION--A COMMISSION FORMED OF US AND INDIAN SCIENTISTS/TECHNICIANS WHICH MEETS ANNUALLY TO DISCUSS AND PROPOSE SOLUTIONS TO PROBLEMS IN THE ECONOMIC, COMMERCIAL, SCIENTIFIC, TECHNOLOGICAL, EDUCATIONAL, AND CULTURAL FIELDS. AN ADDITIONAL BENEFIT OF THE PROJECT WILL BE THE STRENGTHENING OF THE JOINT COMMISSION THROUGH ITS INVOLVEMENT IN THIS PROJECT. THE GOI'S IMPLEMENTING AGENT FOR THIS PROJECT, THE DEPT OF SCIENCE AND TECHNOLOGY (DS&T), WILL AUTHORIZE EXPENDITURES AND FUNCTION AS SECRETARIAT FOR PROJECT ADMINISTRATION. USAID WILL ASSUME A SUPPORTING ROLE, HAVING CONCURRENCE, DISBURSEMENT, LIAISON, AND PROCUREMENT APPROVAL DUTIES; THESE DUTIES WILL REQUIRE THE ASSIGNMENT OF A FULL-TIME USAID ADVISOR IN NEW DELHI. THE SELECTION OF PROJECTS TO BE FUNDED WILL BE THE RESPONSIBILITY OF A TEAM COMPOSED OF JOINT COMMISSION, DS&T, AND USAID PERSONNEL.

GOAL: TO CONTRIBUTE TO RURAL DEVELOPMENT IN INDIA BY IMPROVING THE CONDITIONS OF LIFE OF THAT SEGMENT OF THE POPULATION NOW LIVING IN POVERTY BY INDIAN STANDARDS.

PURPOSE: TO INCREASE INDO/US COLLABORATION IN THE TESTING AND APPLICATION OF SCIENCE AND TECHNOLOGY AS PART OF INDIA'S RURAL DEVELOPMENT EFFORT. SPECIAL EMPHASIS WILL BE PLACED ON TECHNOLOGIES APPROPRIATE TO THE RURAL SETTINGS, I.E., CULTURE, WORKFORCE AND SKILL BASE, AND ECONOMIC SYSTEM.

OUTPUTS: 1. TECHNICAL SKILLS, INCLUDING SHORT-TERM TRAINING, SCIENTIFIC EXCHANGES, WORKSHOPS UPGRADED OR ENHANCED BY INDIAN SCIENTISTS & TECHNOLOGISTS; 2. TECHNICAL EQUIPMENT AVAILABLE; 3. NEW APPROPRIATE TECHNOLOGY (HARDWARE AND/OR SYSTEMS) DEVELOPED IN REAL-LIFE OPERATIONAL MILIEU; 4. SOCIO-ECONOMIC STUDIES ON THE ACCEPTANCE AND ADAPTATION OF NEW TECHNOLOGIES PERFORMED.

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* EVALUATION DOCUMENTATION *
* COUNTRY/BUREAU: PROJECT: *
* TITLE: INITIAL FY: FINAL FY: *
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: RICE RESEARCH IMPROVEMENT
AUTHOR:

PUBLICATION DATE: 12/31/68
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386037900

ABSTRACT: ABSTRACT LOCATED IN PROJECT FOLDER.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: RICE RESEARCH IMPROVEMENT
AUTHOR:

PUBLICATION DATE: 02/03/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386037900

ABSTRACT: 12/68 - 2/70. MOST RESEARCH ACTIVITIES OF PROJECT PROCEEDED AS PLANNED. PERFORMANCE OF INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI) CONTINUED TO BE HIGHLY SATISFACTORY. THERE WAS A DELAY IN ENTOMOLOGICAL RESEARCH ACTIVITY DUE TO THE MATERIALIZATION OF CHEMICAL SIDE EFFECTS ARISING FROM INSECT CONTROL MEASURES. THERE ALSO WAS A SHORTAGE IN PARTICIPANTS TRAINING AT THE IRRI. THE MAJOR PROBLEM WHICH AROSE WAS THE DISAGREEMENT BETWEEN AID & THE GOI OVER THE VIABILITY OF AICRIP-AID DESIRING A MORE PERMANENT INSTITUTIONAL STATUS FOR AICRIP, THE GOI REGARDING AICRIP AS ONLY A TEMPORARY AGENCY. THIS PREVAILING GOI ATTITUDE RESULTED IN A LESS THAN MAXIMAL COMMITMENT TO AICRIP BY THE INDIAN STAFF, PROCUREMENT DELAYS, RAPID PERSONNEL TURNOVER, AND THE IRRI STAFF ASSUMING A PREDOMINANT SHARE OF THE RESEARCH DUTIES, THE RESEARCH SUCCESSSES OF THE PROJECT, HOWEVER, DEMONSTRATED THE EFFECTIVENESS OF THE MULTI-DISCIPLINARY APPROACH.

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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUREAU: INDIA                               PROJECT: 3860281
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* TITLE: AGRICULTURAL UNIVERSITY DEVEL                INITIAL FY: 63   FINAL FY: 77
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DOCUMENT TYPE: END-OF-TOUR REPORT
 TITLE: END-OF-TOUR REPORT-U-513 OF O.N. LIMING
 AUTHOR: LIMING, O.N.

PUBLICATION DATE: 05/26/66
 DIC REFERENCE CENTER NUMBER: IN630.711139
 ORGANIZATION: USAID

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: DISCUSSES POLICIES, ADMINISTRATION AND FINANCES OF AGR UNIVERSITIES DEVELOPMENT IN INDIA. RECOMMENDS COORDINATION OF STAFFING, EQUIPPING, RESEARCH WITH SELF-DEVELOPMENT POLICIES; ALSO INTEGRATION WITH OTHER AGR PROGRAMS. SUGGESTS FUNDING PROCEDURES, USE OF SPECIALISTS AND BETTER COORDINATION WITH STATE AGENCIES. PRESENTS UGLY AMERICAN EXAMPLES TO AVOID.

DOCUMENT TYPE: END-OF-TOUR REPORT
 TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
 AUTHOR: HATCHER, HAZEL M

PUBLICATION DATE: 03/06/69
 DIC REFERENCE CENTER NUMBER: IN630.711P415C
 ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: CONSULTANT ANALYZED HOME SCIENCE NEEDS FOR TEACHING, RESEARCH, EXTENSION, TRAINING, FACILITIES. RECOMMENDATIONS INCLUDE 3-YR DETAILED UNIV CURRICULUM, FACULTY QUALS, HOME SCI FACILITIES SITE PLAN, STAFF, EQUIP, BOOK TRANSLATIONS, TEACHING MATERIALS. 52 SPECIFIC SUGGESTIONS FOR IMPROVING PRACTICES OF HOME SCI RE: FOOD/NUTR/HYGIENE/HOME IMPROVEMENT/CHILD CARE.

DOCUMENT TYPE: END-OF-TOUR REPORT
 TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
 AUTHOR: PEIKERT, F W

PUBLICATION DATE: 04/04/69
 DIC REFERENCE CENTER NUMBER: IN630.711P415C
 ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: DISCUSSES REQUIREMENTS FOR ESTABLISHMENT, OPERATION OF SEPARATE COLLEGE AGRICULTURAL ENGINEERING, DEFINITIONS OF AGR ENG & DETAILED CURRICULUM REQUIREMENTS FOR PROFESSIONAL TRAINING. ASSESSEMENT INDIA'S AGR ENG NEEDS, RECOMMENDATIONS FOR EDUCATIONAL/RESEARCH/EXTENSION RESOURCES, FACULTY/FACILITIES PRIORITIES, GRAD DEGREE/INDUSTL EMPLOYMENT OPPS, CONSULTANTS.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: LYNCH, MICHAEL P

PUBLICATION DATE: 04/09/69
DIC REFERENCE CENTER NUMBER: IN630.711P415CLYNCH
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: RECOMMENDATIONS DESIGNED TO DEVELOP AN EFFECTIVE AGRICULTURAL EXTENSION SERVICE AT UNIVERSITY RESPONSIVE TO NEEDS LOCAL PEOPLE & PRIMARY PROBLEMS TRAINING, INFORMAL TEACHING, APPLYING RESEARCH FINDINGS. PARTICULAR EMPHASIS ON EXTENSION ADMIN, STAFF TRNG, PROFESS IMPROVEMNT, CURRIC/FACILITIES DEVEL, FIELD DEMOS, LOCAL LEADERSHIP/YOUTH DEVEL, COMMUNICATIONS.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: MCAROLE, FRANK J

PUBLICATION DATE: 04/10/69
DIC REFERENCE CENTER NUMBER: IN630.711P415C
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: ADVISES ON ESTABLISHMENT OF A FACULTY OF AGRICULTURAL TECHNOLOGY. EVALUATION OF UNIVERSITY AND AGR RESEARCH STATIONS/PROGRAMS, PRODUCTION/DISTRIB SYSTEMS, CURRICULUM, FACILITIES, COMMODITIES/LIVESTOCK & PROCESSING. PRIORITY RECOMMENDATIONS INCLUDE REORG UNDERGRAD/COLLEGE FOOD SCI/TECH CURRIC, FACULTY, UPGRADING FACILS/POSTGRAD EXTENSION TRNG, RESEARCH, LIB.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: GOBBLE, JAMES L

PUBLICATION DATE: 04/11/69
DIC REFERENCE CENTER NUMBER: IN630.11P415CGOBBLE
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: RECOMMENDATIONS FOR IMPROVING ANIMAL HUSBANDRY PROGRAMS IN BOTH AGRICULTURAL AND VETERINARY COLLEGES. DEALS WITH INDIVIDUAL DEPARTMENTS, FACULTY AND STAFF, WITH ANIMAL HOUSING, LABORATORIES AND OTHER FACILITIES, RESEARCH OPERATIONS AND SPECIFIC COURSEWORK FOR UPGRADING ACADEMIC STANDARDS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT; ORISSA
AUTHOR:

PUBLICATION DATE: 05/27/69
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: BASIC PROBLEM WITH ADMINISTRATION OF ORISSA UNIV OF AG AND TECH IS THAT IT CONTINUES TO BE UNDER OFFICIALS IN STATE MINISTRY OF AGRICULTURE, RESULTING IN PROBLEMS IN STAFFING, SALARY SCALES, TENURE, IMPLEMENTATION OF RESEARCH AND EXTENSION EDUCATION PROGRAMS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT RAJASTHAN
AUTHOR:

PUBLICATION DATE: 05/27/69
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: STATE SUPPORT IS INADEQUATE; THERE HAS BEEN LITTLE SUPPORT FROM CENTER. TRANSFER OF RESEARCH SCHEMES HAS BEEN DELAYED BY STATE OFFICIALS. LACK OF ADEQUATE FINANCIAL SUPPORT IN EARLY STAGES OF DEVELOPMENT, COUNTRY CLEARANCE FOR CONSULTANTS HAS OCCASIONALLY BEEN DELAYED.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: DICKERSON, RUSSELL B

PUBLICATION DATE: 10/31/69
DIC REFERENCE CENTER NUMBER: IN630.711P415C
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: PROVIDES SUMMARY OF ESTABLISHMENT, DEVELOPMENT, OPERATIONS & ACCOMPLISHMENTS OF MAHARASHTRA AGR UNIV (MAU) 1/68-12/69. SPECIFIC RECOMMENDATIONS PARTICIPANT TRNG IN SU/COORDINATING ADMISSIONS POLICIES B MAU; PRIORITY ON RESEARCH/TRNG OF SCIENTISTS/UPGRADING UNDERGRADUATE-GRADUATE PROGRAM DEVEL. CRITICIZES FACULTY INBREEDING, INDICATES IMPROVED GUIDELINES.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: END-OF-TOUR REPORT OF GLENN C. HOLM
AUTHOR: HOLM, GLENN C

PUBLICATION DATE: 11/25/69
DIC REFERENCE CENTER NUMBER: IN630711139
ORGANIZATION: USAID

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: HIGHLIGHTS DEVELOPMENTS IN NEW SERVICE-ORIENTED AGR UNIVERSITIES IN 8 INDIAN STATES. DESCRIBES PERSONNEL, MEETINGS, PAPERS, GUIDELINES AND GOALS OF PRESENT AND PROJECTED GROWTH. DISCUSSES ADMINISTRATION PROBLEMS OF INDIAN COUNCIL OF AGR RESEARCH (ICAR). RECOMMENDS PROCEDURES FOR CONTRACT PERSONNEL, FIELD OPERATIONS COMMITTEE, USAID/GOI COORDINATION.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: COON, BECKFORD F

PUBLICATION DATE: 04/03/70
DIC REFERENCE CENTER NUMBER: IN630.711P415CCOON
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: SUGGESTS WAYS/MEANS FOR ENTOMOLOGY (ENTO) DEPT OF UNIVERSITY TO MEET TRAINING OBLIGATIONS WITHIN 5 YRS. SPECIFIC RECOMMENDATIONS INSTRUCTION, RESEARCH, EXTENSION, FACULTY DEVEL, FACILITIES, FUNDING, AREAS SPECIALIZATION (PARTIC INSECT ECOLOGY), STUDENT PERFORMANCE, QUALIFICATIONS FACULTY. OUTLINES REORG RESEARCH PROGRAMS, LIBRARY, FACULTY HIRING PRACTICES.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: END OF TOUR REPORT OF C.V. RODERICK-TEACHING
METHODS & EVALUATION
AUTHOR: RODERICK, C.V., CONSULTANT

PUBLICATION DATE: 04/15/71
DIC REFERENCE CENTER NUMBER: IN630.711M6786
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: LISTS ACCOMPLISHMENTS OF ORISSA UNIVERSITY OF AGR & TECHNOLOGY AND EVALUATES THEM. RECOMMENDS IMPROVED TEACHING TRAINING ACTIVITIES, LISTS THEM. DISCUSSES DESIRED CURRICULUM AND WAYS TO ACHIEVE IT. ALSO DISCUSSES METHODS OF EVALUATING STUDENTS AND TEACHERS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT MYSORE
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: ABSENCE OF CLOSE WORKING RELATIONSHIP WITH STATE DEPT OF AGRICULTURE. TIME LAG OF 1-3 YR IN RELEASE OF DATA: SOME DATA SO INADEQUATE AS TO BE MISLEADING. FUNDING INADEQUATE FOR NEEDED EXPANSION; SOME DELAYS IN FUNDING. SALARIES LOW WHEN COMPARED WITH THOSE PAID BY BUSINESS. SOME EQUIPMENT FROM OTHER PROJECTS NOT IN OPERATING CONDITION WHEN RECEIVED.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT RAJASTHAN
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: FUNDS FOR PRESENT PROGRAMS ARE NOT YET SUFFICIENT. STATE HAS NOT YET TRANSFERRED RESEARCH FACILITIES TO UNIVERSITY. LACK OF ADEQUATE FINANCIAL SUPPORT IN EARLY STAGES OF DEVELOPMENT. COUNTRY CLEARANCE FOR CONSULTANTS HAS OCCASIONALLY BEEN DELAYED.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: SWOPE, ROBERT E

PUBLICATION DATE: 01/01/71
DIC REFERENCE CENTER NUMBER: IN630.711P415CSWOPE
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: EVALUATES UNIVERSITIES' ACADEMIC/ADMIN PROGRAMS. PRIORITY RECOMMENDATIONS DETAILED: OPERATIONAL ACADEMIC MASTER PLAN, STREAMLINE ADMIN PROCEDURES, UPGRADE CURRICUL/FACULTY/FACILITIES (PARTICULARLY RESEARCH/EXTENSION/TEACHING TRNG), STRENGTHEN GRADUATE EMPLOYMENT OPPS, INCREASE LIB STAFF/FACILS/ACQUISITIONS, IMPROVE COOP BETWEEN AGRICULTURAL UNIVERSITIES.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: SWOPE, ROBERT E

PUBLICATION DATE: 01/01/71
DIC REFERENCE CENTER NUMBER: IN630.711P415CSWOPE
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028108

ABSTRACT: EVALUATES UNIVERSITIES' ACADEMIC/ADMIN PROGRAMS. PRIORITY RECOMMENDATIONS DETAILED; OPERATIONAL ACADEMIC MASTER PLAN, STREAMLINE ADMIN PROCEDURES, UPGRADE CURRICUL/FACULTY/FACILITIES (PARTICULARLY RESEARCH/EXTENSION/TEACHING TRNG), STRENGTHEN GRADUATE EMPLOYMENT OPPS, INCREASE LIB STAFF/FACILS/ACQUISTIONS, IMPROVE COOP BETWEEN AGRICULTURAL UNIVERSITIES.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITIES DEVELOPMENT: UNIVERSITY OF AGRICULTURAL SCIENCES (MYSORE)
AUTHOR:

PUBLICATION DATE: 02/08/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: POLICY OF SHIFTING PERSONNEL HAS PRECLUDED EMERGENCE OF EXPERTISE IN PARTICULAR AREA. ENABLING LEGISLATION IS PARTIAL CAUSE OF THIS PROBLEM. NEW BANGALORE CAMPUS ONLY 5% COMPLETED DUE TO STEEL SHORTAGE. COORDINATION/LIAISON COMMITTEE CREATED TO ACHIEVE CLOSE WORKING RELATIONSHIP BETWEEN UNIVERSITY AND STATE DEPT OF AGRICULTURE.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: AGRICULTURAL UNIVERSITY DEVELOPMENT-MAHARASHTRA
AUTHOR: PEIKERT, FRANK W

PUBLICATION DATE: 04/09/71
DIC REFERENCE CENTER NUMBER: IN630.711P415C
ORGANIZATION: PENNSYLVANIA STATE UNIVERSITY

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: CONTINUES AUTHOR'S 4/4/69 REPORT, DISCUSSING AGRICULTURAL ENGINEERING IN INDIA. RECOMMENDS JOINT EFFORT BETWEEN AGR ENG & AGRONOMY, AGR ECON, ETC, INTER-DISCIPLINARY CONFERENCES/COURSES. PARTICIPATED IN AGR ENG EMPLOYMENT OPPORTUNITIES ANALYSIS, FACULTY REORG, DETAILED CURRICULUM SYLLABUS PREPARATION, SCHOOL FACILS/SRVCS PLANNING, IN-SRVC TRNG PROGRAM DEVEL.

DOCUMENT TYPE: END-OF-TOUR REPORT
TITLE: END-OF-TOUR REPORT OF HAROLD V. WALTON
AUTHOR: WALTON, HAROLD V

PUBLICATION DATE: 05/27/71
DIC REFERENCE CENTER NUMBER: IN630.711M6786WALTON
ORGANIZATION: UNIVERSITY OF MISSOURI

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: DESCRIBES DEVELOPMENT OF ORISSA UNIV. OF AGR & TECHNOLOGY, INDIA UNDER AEGIS OF UNIVERSITY OF MISSOURI/USAID. LISTS CURRICULUM, ADVISORS, PERSONNEL, EXECUTIVE VISITORS, SIGNIFICANT PROJECTS, PROGRAM OUTPUTS FOR THE 12 YEAR PROGRAMS IN UNIVERSITY DEVELOPMENT AND AGR PRODUCTION (1969-71). SUGGESTS HOW TO CONTINUE PLANNING, INSTRUCTION, RESEARCH.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AUD: UNIVERSITY OF UDAIPUR (RAJASTHAN)
AUTHOR:

PUBLICATION DATE: 12/09/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: OHIO STATE UNIV, USAID, INDIAN GOVT HAVE WITHHELD ADDITIONAL TECHNICAL ASSISTANCE UNTIL BARRIERS TO PROGRESS ARE RESOLVED. PARTICIPANTS NOT SELECTED ON BASIS OF PRIORITY NEEDS, ORIENTED TOO MUCH TOWARD RESEARCH. RETURNED PARTICIPANTS ARE UNDERUTILIZED. FINANCIAL SUPPORT IS INADEQUATE. FISCAL MANAGEMENT WEAKNESS PREVENTS EFFECTIVE USE OF FUNDS. STAFF SHORTAGE

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITIES DEVELOPMENT: ANDHRA PRADESH
AUTHOR:

PUBLICATION DATE: 03/12/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: CONTINUING TENSION IN ANDHRA PRADESH HAS MADE MORE RAPID PROGRESS DIFFICULT BY LIMITING FORWARD PLANNING, COMPLICATING ADMINISTRATION OF CURRENT PROGRAMS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITIES DEVELOPMENT: UNIVERSITY OF UDAIPUR (RAJASTHAN)
AUTHOR:

PUBLICATION DATE: 03/14/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: UNIVERSITY PROGRAMS HAVE BEEN SPOTTY, SPASMODIC, DISAPPOINTING AT UNIV OF UDAIPUR. HAD NOT COMPLIED ADEQUATELY WITH CRITERIA; HAD NO LONG-RANGE PLAN AND INTEGRATION OF TEACHING, RESEARCH, EXTENSION WAS NON-EXISTENT; FINANCIAL SUPPORT FROM PUBLIC SECTOR WAS INADEQUATE; DESIRED CHANGES IN INTERNAL ORGANIZATION OF UNIV HAD NOT BEEN MADE.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL UNIVERSITIES DEVELOPMENT: MAHATMA PHULE KRISHI VIDYAPEETH (MPKV) MAHARASHTRA.
AUTHOR:

PUBLICATION DATE: 10/03/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386028100

ABSTRACT: PAUCITY OF WELL-TRAINED STAFF AT MAHATMA PHULE AG UNIV. SEVERAL UNFILLED SENIOR POSITIONS. RESTRICTED COMPETITION IN FILLING VACANCIES. POLITICAL INTERFERENCE IN MANAGEMENT. INADEQUATE LAB EQUIPMENT, TEACHING AIDS. INSUFFICIENT RELIABLE WATER FACILITIES. CLOSE OUT OPERATIONS BROUGHT TO LIGHT SERIOUS FINANCIAL IRREGULARITIES BY LOCAL STAFF.

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* EVALUATION DOCUMENTATION
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* COUNTRY/BUREAU: INDIA PROJECT: 3860366
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* TITLE: AG PRODUCTION AP INITIAL FY: 66 FINAL FY: 77
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DOCUMENT TYPE: END-OF-TOUR REPORT
 TITLE: AGRICULTURAL PRODUCTION PROJECT, BIHAR
 AUTHOR: CROMWELL, C F

PUBLICATION DATE:
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT: DETAILS IMPROVED IRRIGATION PRACTICES INTRODUCED IN INDIA, AND NOTES FAVORABLE GOVT OF INDIA POLICIES ENCOURAGING UTILIZATION OF SUCH PRACTICES. CONTAINS SIX SHORT-TERM RECOMMENDATIONS FOR OVERCOMING RESTRAINTS ON AGRICULTURAL PRODUCTION, 2/70 TO 1/72.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: AGRICULTURAL PRODUCTION - TAMIL NADU
 AUTHOR:

PUBLICATION DATE: 04/24/69
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: AGRICULTURAL PRODUCTION - MYSORE
 AUTHOR:

PUBLICATION DATE: 04/24/69
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: AGRICULTURAL PRODUCTION - GUJARAT
 AUTHOR:

PUBLICATION DATE: 04/24/69
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036609

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION - BIHAR
AUTHOR:

PUBLICATION DATE: 04/24/69
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION - TAMIL NADU
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION-MYSORE
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION-MYSORE
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT: EVALUATES PERFORMANCE OF THE INDIAN AGRICULTURAL PRODUCTION PROJECT AS IMPLEMENTED IN THE STATE OF MYSORE DURING THE PERIOD 12/68 THROUGH 12/69. PROJECT INTENDED TO INCREASE AGR PRODUCTION BY UPGRADING THE CAPABILITY OF THE STATE DEPT OF AGR FOR PROVIDING SERVICES TO CULTIVATORS AND THE STATE AGR UNIVERSITY FOR CONDUCTING RELEVANT RESEARCH. PROJECT PROCEEDED ACCORDING TO PLAN AND, AT TIME OF THIS EVAL, IT APPEARED THAT PROJECT TARGETS WOULD BE ACHIEVED. THE ONLY ACTIVITIES BEHIND SCHEDULE WERE THE PLANT PROTECTION AND SEED STORAGE PILOT PROJECTS, ASSISTANCE TO THE STATE DEPT OF AGR IN THE IMPLEMENTATION OF THE SEED ACT, AND THE DESIGN OF THE SMALL GRAIN DRIER FOR VILLAGE USE. THE PERFORMANCE OF THE CONTRACT STAFF WAS HIGHLY SATISFACTORY. THESE ADVISORS WERE BEING INCLUDED IN THE PLANNING AND IMPLEMENTATION OF THE AGR DEPT'S PROGRAM. ALSO THE HIGH LEVEL COORDINATING COMMITTEE SUCCESSFULLY HELPED TO BRING ABOUT THE COOPERATION AND COORDINATION OF THE AGR DEPT AND THE UNIVERSITY. THE APPOINTMENT OF A TEAM LEADER IMPROVED THE GENERALLY GOOD RELATIONSHIP AMONG MEMBERS OF THE CONTRACT TEAM. A SOIL TESTING CROP CORRELATION ACTIVITY WAS DEVELOPED IN RESPONSE TO THE LACK OF RELIABLE DATA ON THE FERTILIZER RESPONSE OF HIGH YIELDING VARIETIES. IT IS RECOMMENDED: 1) CONTINUING ANALYSIS IS NEEDED TO DETERMINE WHETHER THE TIME PROGRAMMED IS SUFFICIENT TO INSURE CONTINUATION BY THE HOST COUNTRY AFTER AMERICAN SPECIALISTS ARE PHASED OUT; 2) IN ORDER TO REDUCE COSTS AND IMPROVE RESULTS, CONTRACTOR SHOULD PROVIDE SPECIALISTS WHO WOULD REMAIN FOR TWO TOURS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: PAR: AGRICULTURAL PRODUCTION-GUJARAT
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT: PROJECT APPRAISAL REPORT FOR 1969 CALENDAR YEAR ASSESSES PERFORMANCE OF FY68/FY73 AGRICULTURAL PRODUCTION PROJECT IN INDIAN STATE OF GUJARAT. PROJECT DESIGNED TO OVERCOME TRADITIONAL PRACTICES & TO HELP DEVELOP TECHNICAL SKILLS AND MANAGEMENT CAPABILITIES WITHIN THE STATE DEPT OF AGRIC AND STATE RESEARCH FACILITIES, ASSURING FULL APPLICATION OF INPUTS IN THE PRODUCTION, DISTRIBUTION & MARKETING OF HIGHER-YIELD FOODSTUFFS. UNDER A PASA WITH THE US DEPT OF AGRIC, FOUR US AGRIC SPECIALISTS HAVE BEEN PROVIDED TO SUPERVISE IMPLEMENTATION OF PROJECT ACTIVITIES. MISSION REVIEW POINTS TO PROGRESS IN PROJECT THAT WAS SIGNIFICANTLY BEHIND SCHEDULE DUE TO SLOW RECRUITMENT AND LATE ARRIVAL OF US TECHNICIANS. A BALANCED PROGRAM HAS BEEN DEVELOPED TO MEET PROJECT OBJECTIVES. FIELD PROBLEM UNITS HAVE DEVELOPED ACTIVITIES FOR THE SOLUTION OF SIGNIFICANT PROBLEMS IN FOOD CROP PRODUCTION: PROGRAMS HAVE BEEN INITIATED IN WATER MANAGEMENT FOR IRRIGATION, STORAGE & PROCESSING OF IMPROVED VARIETIES OF SEED, AND DEVELOPMENT AND TESTING OF IMPROVED PLANTING & THRESHING MACHINERY; DEMONSTRATIONS ON WIND EROSION CONTROL HAVE BEGUN. SOIL TESTING, WHEAT NUTRIENT RESEARCH, GRAIN STORAGE BIN TESTING, AND OTHER ACTIVITIES ARE STILL BEHIND SCHEDULE. TWO PARTICIPANTS HAVE THUS FAR BEEN TRAINED; FIVE OTHERS ARE SCHEDULE TO DEPART FOR THE USA IN 1970; ALL ARE WORKING WITHIN THEIR FIELDS OF TRAINING AND ARE JUDGED TO BE OF HIGH CALIBER. THE WIDE DISPERSAL OF THE TECHNICIANS THROUGHOUT THE STATE IS DEEMED BY THE MISSION TO PROVIDE A HANDICAP TO PROJECT EFFORTS, BUT SUCH LOCATION IS AT THE REQUEST OF THE STATE WHICH HAS DECENTRALIZED ITS AGRICULTURAL ADMINISTRATIVE ORGANIZATION. THREE OF THE FOUR PASA TECHNICIANS HAVE HAD NO PREVIOUS FOREIGN EXPERIENCE, RESULTING THEREFORE IN THEIR HAVING SOME MINOR ADJUSTMENT PROBLEMS. THE TEAM LEADER HAS BEEN LAX IN ADHERING TO AID ADMINISTRATIVE REGULATIONS. DESPITE DELAYS AND INITIAL OPERATIONAL PROBLEMS, THE MISSION REGARDS THE PROJECT TO BE VALID AND PROCEEDING AS PROGRAMMED.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: PAR: AGRICULTURAL PRODUCTION (BIHAR)
AUTHOR:

PUBLICATION DATE: 11/12/70
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION - TAMIL NADU
AUTHOR:

PUBLICATION DATE: 09/07/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION (MYSORE)
AUTHOR:

PUBLICATION DATE: 09/07/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036606

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: PAR: AGRICULTURAL PRODUCTION(BIHAR)
AUTHOR:

PUBLICATION DATE: 09/09/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT: PROJECT APPRAISAL REPORT FOR PERIOD 1/1/70-6/30/71 ASSESSES PERFORMANCE OF FY68/FY73 AGRICULTURAL PRODUCTION PROJECT IN INDIAN STATE OF BIHAR. SUBPROJECT DESIGNED TO DEVELOP TECHNICAL SKILLS & MANAGEMENT CAPABILITIES WITHIN STATE DEPT OF AGRICULTURE AND STATE RESEARCH FACILITIES, ASSURING FULL APPLICATION OF INPUTS IN THE PRODUCTION, DISTRIBUTION & MARKETING OF HIGHER-YIELD FOODSTUFFS. UNDER CONTRACT WITH UNIV MISSOURI, TECHNICIAN SPECIALISTS BEING PROVIDED TO DIRECT FIELD PROBLEM UNIT OPERATIONS. MUCH PROGRESS NOTED WITH PROGRAMS INSTITUTED FOR CONTROL OF GRUB WORMS IN LARGE AREAS AT CONTROL IN 10 DISTRICTS; A STATEWIDE INSECT & DISEASE SURVEILLANCE PROGRAM; PUSA BIN GRAIN STORAGE DEMONSTRATIONS; AND LAND-LEVELING FOR BETTER IRRIGATION METHODS & WATER USAGE. ALL ACTIVITIES ARE WELL PUBLICIZED THROUGH PUBLICATIONS & BULLETINS OF STATE-SPONSORED AGRIC INFO CENTER. PILOT VILLAGE INPUT KITS ARE BEING DISTRIBUTED TO WHEAT, PADDY, AND MAIZE FARMERS IN SELECTED AREAS WITH TRAINING OF EXTENSION AGENTS & SUBJECT MATTER SPECIALISTS IN EACH AREA. NUMEROUS CHANGES OF STATE-LEVEL STAFF HAVE LIMITED FUNCTIONS OF HIGH LEVEL COORDINATION COMMITTEE, BUT PROJ HAS CONTINUED DUE TO COMPETENCE OF ADVISORY TEAM & FIELD-LEVEL STAFF WORKERS. A STATE AGRIC UNIV IS CURRENTLY BEING CONSTITUTED WITH ASSIGNMENT OF RESEARCH STAFFS FROM THE STATE'S THREE AGRIC COLLEGES. DVLP OF THE UNIV AND ITS PROGRAMS IS EXPECTED TO PROCEED SLOWLY, BUT KEY INDIVIDUALS INVOLVED APPEAR COMMITTED TO PROJ-ASSOCIATED GOALS. MISSION RECOMMENDS THE COLLECTION OF MORE ADEQUATE DATA TO ENSURE MEASUREMENT OF PROJ OUTPUTS AND END-OF-PROJECT CONDITIONS; WORDING OF FUTURE CONTRACTS BY AID/W TO INCLUDE SUCH EXPECTED END-OF-PROJ OUTPUTS/CONDITIONS; AND CONSIDERATION OF THE ASSIGNMENT OF TECHNICIAN STAFF MEMBER TO ASSIST THE PROJ MANAGER. AN IN-DEPTH EVALUATION OF THE SUBPROJECT IS SCHEDULED PRIOR TO 6/30/72.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: PAR: AGRICULTURAL PRODUCTION(GUJARAT)
AUTHOR: BAUMAN, OLIVER A

PUBLICATION DATE: 09/13/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT:

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: AGRICULTURAL PRODUCTION (ORISSA)
AUTHOR:

PUBLICATION DATE: 02/09/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036600

ABSTRACT: COOPERATIVE WORKING RELATIONSHIP BROUGHT ABOUT PREVIOUSLY AMONG SUBJECT MATTER SPECIALISTS AND UNIVERSITY RESEARCH STAFF RECEIVED SETBACK WITH TRANSFER OF ADMINISTRATIVE CONTROL OF SPECIALISTS TO DEAN OF EXTENSION IN ORISSA UNIV OF AGRICULTURE AND TECHNOLOGY. (OUAT). AFTER DEPARTURE OF US TECHNICIANS FIELD PROBLEM UNITS PRACTICALLY CEASED TO FUNCTION.

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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUPEAU: INDIA                                           PROJECT: 3860368
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* TITLE: SOIL AND WATER MGT. U.P.                               INITIAL FY: 66   FINAL FY: 75
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DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: SOIL AND WATER MANAGEMENT (MYSOPE)
 AUTHOR:

PUBLICATION DATE: 02/07/69
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036801

ABSTRACT: ADMINISTRATIVE, BUDGETARY PROBLEMS BETWEEN CENTER AND STATE HAVE DELAYED PROJECT. PROGRESS TOWARD PROJECT TARGETS IS RATED UNSATISFACTORY. CONDITIONS AFFECTING OUTPUT ARE DISCUSSED. 4 ACTIVITIES ARE BEHIND SCHEDULE. TIMELINESS OF INPUTS IS RATED. 9 OPERATIONAL FACTORS WITHIN GOI PURVIEW ARE EVALUATED NEGATIVELY AND DISCUSSED. TERMINATION IS CONTEMPLATED.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: SOIL AND WATER MANAGEMENT (MYSOPE)
 AUTHOR:

PUBLICATION DATE: 12/31/69
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036801

ABSTRACT: INCREASED STATE SUPPORT FOR PROJECT HAS RESULTED IN SATISFACTORY RATING OF PROGRESS TOWARD PROJECT TARGETS. 1 ACTIVITY IS BEHIND SCHEDULE. EFFECT OF INPUTS IS RATED. 7 GOI ACTIVITIES ARE EVALUATED NEGATIVELY AND DISCUSSED. ONLY 1 RETURNED PARTICIPANT HAS BEEN ASSIGNED TO PROJECT.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
 TITLE: SOIL AND WATER MANAGEMENT (MYSOPE)
 AUTHOR:

PUBLICATION DATE: 10/14/71
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036801

ABSTRACT: KEY INPUTS, CONTRACTOR, INDIAN GOVERNMENT RECEIVE SATISFACTORY RATINGS. QUANTITATIVE PROGRESS TOWARD 5 PROJECT OUTPUTS IS SHOWN, AND TRAINING CENTER IS DISCUSSED. PROGRESS TOWARD 5 END OF PROJECT CONDITIONS IS EVALUATED. STATE DEPT OF AGRICULTURE IS NOT PROVIDING ADEQUATE TECHNICAL BACKSTOPPING. 2 RECOMMENDATIONS ARE MADE.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: SOIL AND WATER MANAGEMENT (PUNJAB)
AUTHOR: BUTLER, ELWIN D

PUBLICATION DATE: 10/14/71
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID, INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036802

ABSTRACT: PARTICIPANT AVAILABILITY AND SELECTION HAS NOT MET EXPECTATIONS. INADEQUATE PERFORMANCE IN POSTING KEY COUNTERPARTS AND INTERDEPARTMENTAL COMMUNICATION WEAKNESSES HAMPER OPERATIONS. LACK OF COOPERATION AMONG VARIOUS STATE GOVERNMENT DEPARTMENTS CREATES DELAYS IN PROGRESS.

DOCUMENT TYPE: SPECIAL EVALUATION REPORT
TITLE: APPRAISAL OF SOIL AND WATER MANAGEMENT PILOT PROJECT IN INDIA
AUTHOR: COX, MILO L
BISHOP, ALVIN
FRANGE, FRED A

PUBLICATION DATE: 04/01/72
DIC REFERENCE CENTER NUMBER: IN631.4C877
ORGANIZATION:

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036801 386036802 386036803

ABSTRACT: AT THIS TIME IT WOULD BE INAPPROPRIATE TO LABEL THE PROJECT AS COMPLETED AND HIGHLY SUCCESSFUL. TO A DEGREE, SOME PROGRESS HAS BEEN MADE ON ALL OBJECTIVES. ALTHOUGH SOME PROGRESS HAS BEEN MADE IN OBTAINING A CONCERTED APPROACH TO THE WATER MANAGEMENT PROBLEMS, A UNIFIED COMMITMENT AND VIABLE PROGRAM DO NOT YET EXIST. THE IMPORTANCE OF THE PILOT PROJECTS APPEARS TO LIE IN THE FACT THAT THEIR BASIC IMPACT IS IN THE CRITICAL TECHNIQUE APPLICATION AREA. THE PROJECTS APPEAR TO BE TECHNICALLY SOUND IN THEIR CONCEPTION, WITH AN INTEGRATED APPROACH TO THE PROBLEMS OF ON-FARM WATER MANAGEMENT ENVISIONED IN THE DESIGN. GENERAL PROJECT ACCOMPLISHMENT INCLUDE: (1) ORGANIZED, STAFFED AND IMPLEMENTED THREE PILOT PROJECTS TO INTRODUCE AN INTEGRATED APPROACH TO SOIL AND WATER MANAGEMENT; (2) DEVELOPED AND PUBLISHED SIGNIFICANT WORKS; AND (3) ASSISTED IN LAUNCHING A RESEARCH PROGRAM WITH GREATER EMPHASIS ON SOILS AND WATER. PILOT PROJECT ACCOMPLISHMENTS INCLUDE: (1) INTRODUCED AN INTEGRATED APPROACH TO ON-FARM WATER MANAGEMENT; (2) CONFIRMED THE HYPOTHESIS THAT INCREASED YIELDS WOULD RESULT; (3) CONVINCED SOME CULTIVATORS OF THE VALUE OF PROPER LAND PREPARATION AND WATER MANAGEMENT; AND (4) TRAINED A NUMBER OF TECHNICIANS IN THE VARIOUS TECHNICAL COMPONENTS OF WATER MANAGEMENT AND ASSOCIATED PRACTICES.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: SOIL AND WATER MANAGEMENT- MYSORE
AUTHOR: BULLARD, ERVIN T

PUBLICATION DATE: 03/13/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036802

ABSTRACT: LITTLE PROGRESS MADE IN GENERATING COMMUNITY ACTION TO CONSTRUCT JOINT IRRIGATION WORKS.

DOCUMENT TYPE: PROJECT APPRAISAL REPORT
TITLE: SOIL AND WATER MANAGEMENT (GROUNDWATER)
AUTHOR: BULLARD, E T

PUBLICATION DATE: 09/17/73
DIC REFERENCE CENTER NUMBER:
ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386036804

ABSTRACT: ABRUPT TERMINATION ENDED HIGH PRIORITY PROJECT IN USAID PROGRAM. THERE WILL BE SHORTAGE IN TRAINED STAFF TO COMPLETE PROGRAM.


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*                               EVALUATION DOCUMENTATION                               *
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* COUNTRY/BUREAU: INDIA                PROJECT: 3860464                *
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* TITLE: GUJARAT MEDIUM IRRIGATION    INITIAL FY: 78    FINAL FY: 83    *
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DOCUMENT TYPE: AUDIT REPORT
 TITLE: AUDIT REPORT ON THE EXAMINATION OF THE INDIA AID
 PROSPAM
 AUTHOR:

PUBLICATION DATE: 04/01/77
 DIC REFERENCE CENTER NUMBER:
 ORGANIZATION: USAID/INDIA

PROJECTS (AND SUB-PROJECTS) EVALUATED: 386046500 386046400 386045500

ABSTRACT: EVALUATES USAID PROGRAM OPERATIONS & MISSION OPERATING EXPENSES FOR FY78 IN INDIA. THE DEVELOPMENT PROGRAM CONSISTED OF \$60 MILLION FUNDING FOR PROJECTS IN IRRIGATION, MALARIA AND SCIENCE & TECHNOLOGY. RECORDS WERE REVIEWED AND EXTENSIVE DISCUSSIONS HELD WITH APPROPRIATE AID & EMBASSY OFFICIALS FOR THE EVALUATION.

IN GENERAL, THE USAID DEVELOPMENT ASSISTANCE PROGRAM WAS FOUND TO BE IN ACCORDANCE WITH RELEVANT PLANNING DOCUMENTS. THE PRINCIPAL CONCERN INVOLVED THE LACK OF SPECIFICITY IN THE DESIGN & IMPLEMENTATION PLANS FOR THE GUJARAT MEDIUM IRRIGATION PROJECT (#3860464, LOAN 386-T-223). ACTIVITIES UNDER THIS PROJECT WILL INCLUDE THE CONSTRUCTION & MODERNIZATION OF IRRIGATION FACILITIES IN THE STATE OF GUJARAT IN WESTERN INDIA. ALL OF THE USAID \$30 MILLION LOAN IS MARKED FOR LOCAL RUPEE CONSTRUCTION COSTS. THE WORLD BANK THROUGH THE INTERNATIONAL DEVELOPMENT ASSOCIATION WILL PROVIDE \$85 MILLION & THE GOI WILL PROVIDE \$100 MILLION. HOWEVER, THE NUMBER & LOCATIONS OF DAMS & CANALS TO BE BUILT HAVE NOT YET BEEN DETERMINED. DESPITE BEING ESSENTIALLY A WORLD BANK-GOI PROJECT, THE AUTHORS RECOMMEND SPECIAL MONITORING & PROGRESS REPORTS BY AID DUE TO THE SERIOUSNESS OF THE SITUATION.

THERE WAS A SLIGHT DELAY IN SATISFYING LOAN CONDITIONS FOR THE MALARIA CONTROL PROJECT (3860455, LOAN 386-U-224) FOR WHICH USAID IS PROVIDING \$28 MILLION FOR THE PROCUREMENT OF US INSECTICIDES. THE \$2 MILLION GRANT FOR SCIENCE & TECHNOLOGY (3860465) WILL COVER THE US DOLLAR COSTS OF APPROVED SUB-PROJECTS UTILIZING INDO/US SCIENCE & TECHNOLOGY RESOURCES IN RURAL DEVELOPMENT EFFORT. AS OF 4/17/79, NO SUB-PROJECTS HAD BEEN SELECTED OR APPROVED FOR FUNDING. THE AUDIT ALSO INCLUDED A SELECTIVE EXAMINATION OF THE \$633,500 EXPENDED BY USAID FOR FY78 OPERATING EXPENSES. NO SIGNIFICANT DEPARTURES FROM AID POLICY & PROCEDURES WERE DISCOVERED EXCEPT IN THE AREA OF REVIEW & CONTROL OF NON-EXPENDABLE PROPERTY. AUTHORS RECOMMENDED STRENGTHENING OF CONTROLS OVER VEHICLE MANAGEMENT & PROCUREMENT OF CARPETING, AIR CONDITIONERS & OTHER FURNITURE.

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* EVALUATION DOCUMENTATION
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* COUNTRY/BUREAU: INDIA PROJECT: 3860465
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* TITLE: APPLICATION OF SCIENCE/TECH FOR RURALDEV INITIAL FY: 78 FINAL FY: 81
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DOCUMENT TYPE: AUDIT REPORT PUBLICATION DATE: 04/01/77
TITLE: AUDIT REPORT ON THE EXAMINATION OF THE INDIA AID DIC REFERENCE CENTER NUMBER:
PROGRAM
AUTHOR: ORGANIZATION: USAID/INDIA

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PROJECTS (AND SUB-PROJECTS) EVALUATED: 386046500 386046400 386045500

ABSTRACT: EVALUATES USAID PROGRAM OPERATIONS & MISSION OPERATING EXPENSES FOR FY78 IN INDIA. THE DEVELOPMENT PROGRAM CONSISTED OF \$60 MILLION FUNDING FOR PROJECTS IN IRRIGATION, MALARIA AND SCIENCE & TECHNOLOGY. RECORDS WERE REVIEWED AND EXTENSIVE DISCUSSIONS HELD WITH APPROPRIATE AID & EMBASSY OFFICIALS FOR THE EVALUATION.

IN GENERAL, THE USAID DEVELOPMENT ASSISTANCE PROGRAM WAS FOUND TO BE IN ACCORDANCE WITH RELEVANT PLANNING DOCUMENTS. THE PRINCIPAL CONCERN INVOLVED THE LACK OF SPECIFICITY IN THE DESIGN & IMPLEMENTATION PLANS FOR THE GUJARAT MEDIUM IRRIGATION PROJECT (3860464, LOAN 386-T-223). ACTIVITIES UNDER THIS PROJECT WILL INCLUDE THE CONSTRUCTION & MODERNIZATION OF IRRIGATION FACILITIES IN THE STATE OF GUJARAT IN WESTERN INDIA. ALL OF THE USAID \$30 MILLION LOAN IS MARKED FOR LOCAL RUPEE CONSTRUCTION COSTS. THE WORLD BANK THROUGH THE INTERNATIONAL DEVELOPMENT ASSOCIATION WILL PROVIDE \$85 MILLION & THE GOI WILL PROVIDE \$100 MILLION. HOWEVER, THE NUMBER & LOCATIONS OF DAMS & CANALS TO BE BUILT HAVE NOT YET BEEN DETERMINED. DESPITE BEING ESSENTIALLY A WORLD BANK-GOI PROJECT, THE AUTHORS RECOMMEND SPECIAL MONITORING & PROGRESS REPORTS BY AID DUE TO THE SERIOUSNESS OF THE SITUATION.

THERE WAS A SLIGHT DELAY IN SATISFYING LOAN CONDITIONS FOR THE MALARIA CONTROL PROJECT (3860455, LOAN 386-U-224) FOR WHICH USAID IS PROVIDING \$28 MILLION FOR THE PROCUREMENT OF US INSECTICIDES. THE \$2 MILLION GRANT FOR SCIENCE & TECHNOLOGY (3860465) WILL COVER THE US DOLLAR COSTS OF APPROVED SUB-PROJECTS UTILIZING INDO/US SCIENCE & TECHNOLOGY RESOURCES IN RURAL DEVELOPMENT EFFORT. AS OF 4/17/79, NO SUB-PROJECTS HAD BEEN SELECTED OR APPROVED FOR FUNDING. THE AUDIT ALSO INCLUDED A SELECTIVE EXAMINATION OF THE \$33,500 EXPENDED BY USAID FOR FY78 OPERATING EXPENSES. NO SIGNIFICANT DEPARTURES FROM AID POLICY & PROCEDURES WERE DISCOVERED EXCEPT IN THE AREA OF REVIEW & CONTROL OF NON-EXPENDABLE PROPERTY. AUTHORS RECOMMENDED STRENGTHENING OF CONTROLS OVER VEHICLE MANAGEMENT & PROCUREMENT OF CARPETING, AIR CONDITIONERS & OTHER FURNITURE.

OPTION AUTOMAC,NOITEMS,NOHEADING,NLCHAR 100,COMMENT 000.

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APPENDIX C

Agricultural Research System
in Korea

by

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I. Introduction

The total land area of the Republic of Korea is about 9,882,000 hectares. The arable land occupies only 22.7 percent, amounting to 2,238,000 hectares. In 1976, the area of paddy field cultivation was about 1,290,000 hectares, while that of upland cultivation was 948,000 hectares.

The farm population of Korea in 1976 consisted of 12,785,000 persons which is 35.7 percent of the total population of 35,860,000 persons. The average farm size per household was only 0.9 hectares. This indicates that Korean farms represent very small scale operations. Because of this, the Korean farmers endeavor to get maximum return from their small units of land through intensive application of human labor and available scientific farming techniques. Therefore, agricultural research plays a very significant part in improving farming techniques so that farmers can receive maximum output from their endeavors.

Table 1. Land use.

Item	Area	Unit: 1,000 ha : 1,000 persons	
		%	
1. Total land area	9,882	100.0	
Arable land area	2,238	22.7 (100.0)	
Paddy field	1,290	- (57.6)	
Upland	948	- (42.4)	
2. Total population	35,860	100.0	
Agricultural population	12,785	35.7	
3. Average size of farm	0.9 ha	-	

Note: Number in parenthesis stands for percentage of the total arable land.

Source: Year Book of Agriculture and Forestry Statistics, 1976.

II. Agricultural Research Organizations

Agricultural Research in Korea is carried out by several organizations such as the Office of Rural Development, the National Agricultural Economics Institute, the Office of Fisheries, the Office of Monopoly, the Office of Forestry and 24 Colleges of Agriculture. The Office of Rural Development serves as the biggest research organization responsible for improving farming techniques and rural living standards.

		Number of Research Staff
Ministry of Agriculture & Fisheries		
---	Office of Rural Development (12 Research Institutes and Stations)	820
---	Office of Fisheries (National Fisheries Development Institute)	145
-----	National Agricultural Economics Institute	37
Ministry of Finance		
---	Office of Monopoly (Tobacco & Ginseng Research Institute, and 4 Tobacco Experiment Stations)	106
Ministry of Home Affairs		
---	Office of Forestry (Forest Resources Research Center, Forestry Research Institute, and Forest Genetics Research Institute)	150
Ministry of Education		
-----	24 Universities and Colleges	623

Figure 1. Agricultural research organizations.

III. History of Agricultural Research in Korea

A modest beginning of organized research dates back to 1905 when an agricultural demonstration farm under the direction of the Ministry of Agriculture and Commerce was established at Seoul. This station was the only farm conducting agricultural research in Korea. In 1906, the station was moved to its present location in Suweon and at the same time an agricultural school was founded near the farm. The purpose of having the research farm was to obtain basic data for farming and to introduce modern agricultural farming techniques to Korean farmers. In 1929, the farm was renamed the Agricultural Experiment Station and several branch stations were established in different localities.

In 1946, the station was renamed the Central Agricultural Experiment Station. The Central Livestock and Horticulture Institutes were established in 1952 and 1953, respectively. Research during the decade included a systematic listing of various crop varieties together with the selection of superior varieties and the dissemination of seeds, breeding stock and vaccine to farmers. A basic plan for soil classification was carried out. The selection of better vegetable varieties, the establishment of a production system and a properly managed vegetable seed multiplication program were also implemented.

The coordinated activities in research and extension were largely the result of the proposal submitted in 1956 by Dr. Harold Macy, Dean of the Institute of Agriculture, University of Minnesota.

An Agricultural Extension Act was inaugurated and became effective in February, 1957. Accordingly, the Institute of

Agriculture was founded, combining a total of 29 organizations under one agency. The Institute undertook the massive task of rehabilitating, reorganizing and reconstructing badly damaged, destroyed or non-existent facilities and various items needed for the research, extension and training programs.

After establishing the Institute, rapid progress was made in many fields of research with emphasis on developing superior varieties of food grains, improved cultural practices, plant nutrition, animal breeding, forage production and cash crops (vegetables, sericulture and fruit trees). Several major accomplishments were the production of hybrid corn, virus-free seed potatoes, a vegetable seed industry, the development of new soybean varieties, experiments in land reclamation, the manufacture of veterinary biologicals, and many other agricultural advancements.

The Rural Development Act was enacted to establish a more efficient system of rural guidance and to assist in obtaining expanded and intensified rural programs necessary for implementing the reconstruction of the nation's economic independence. The Office of Rural Development was founded in 1962. The Office succeeded the former Institute of Agriculture and was assigned the functions, authority and responsibility for developing Korean agriculture through scientific studies. The slightly new direction was based principally on the success of previous work. All available funds, facilities and scientists are used to help the rural farmer raise his standard of living and to advance the Government's Rural Modernization Program.

Table 2. History of agricultural research in Korea.

Year	Research Organization Established
1905	Agricultural Demonstration Farm
1906	Agricultural School
1929	Agricultural Experiment Station
1946	Central Agricultural Experiment Station
1952	Central Livestock Institute
1953	Central Horticulture Institute
1957	Institute of Agriculture
1962	Office of Rural Development

IV. Organization and Personnel of the Office of Rural Development

I am working at the Office of Rural Development as the Director of its Agricultural Research Bureau.

The Office of Rural Development is composed of the Planning and Management Office, the Research Bureau, the Rural Guidance Bureau, and the Technical Dissemination Bureau. In addition, there are 12 research organizations. These are shown in Figure 2. At the local level there are nine Provincial Offices of Rural Development, 173 city and county Rural Guidance Offices, and 1,472 Branch Guidance Offices at the township level engaged in rural development programs.

The Office of Rural Development has a total of 9,373 members. Of these members, 820 are assigned to research institutes and stations, as shown in Table 3.

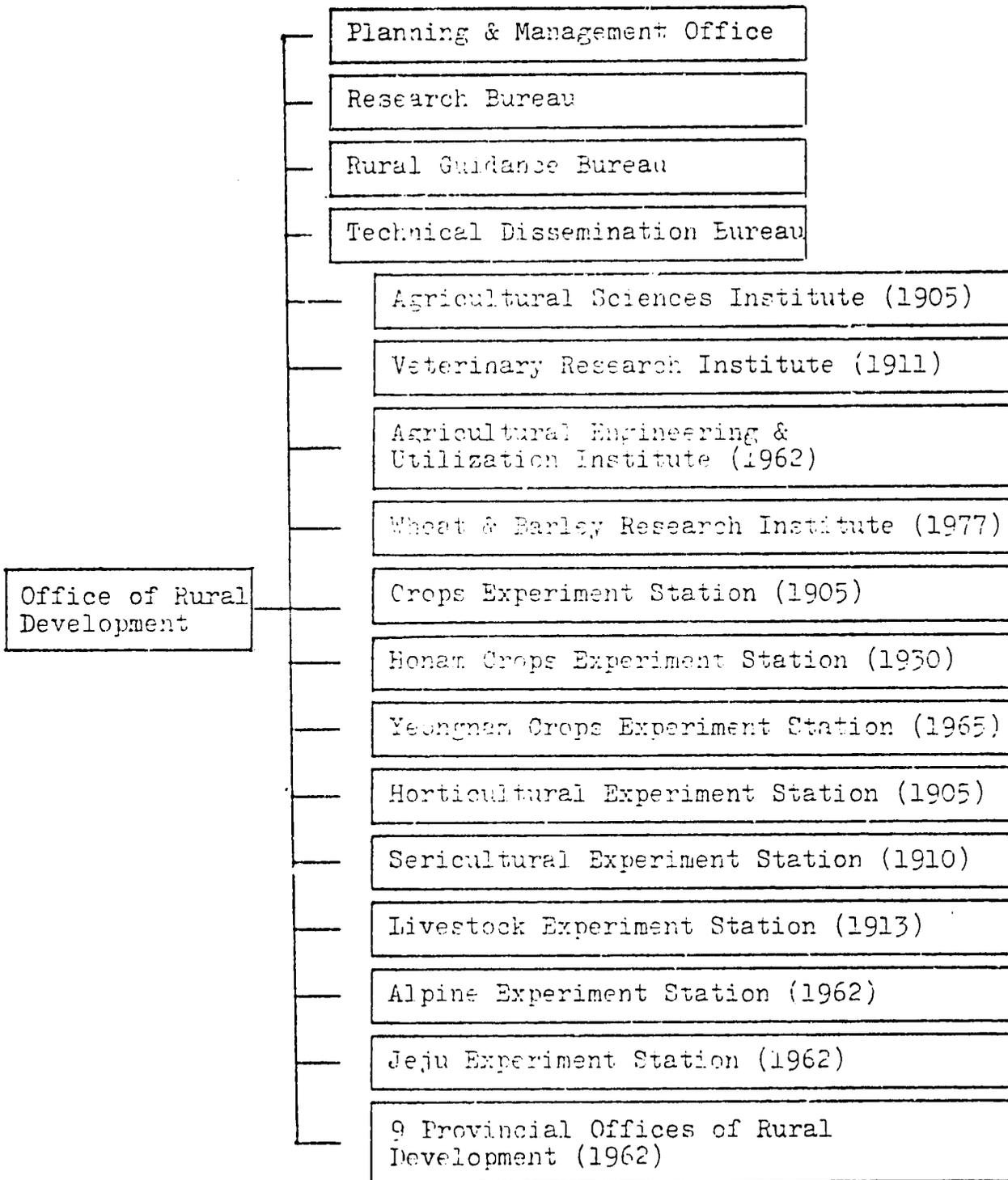


Figure 2. Organization of the Office of Rural Development.

Table 3. Organizational distribution of agricultural researchers of ORD.

Organization	Number of Staff					
	Total	1st class	2nd class	3rd class	4th class	5th class
Total	820	2	18	185	573	42
Research Bureau	34	-	8	11	15	-
Agricultural Sciences Institute	137	1	-	27	109	-
Veterinary Research Institute	52	-	1	20	31	-
Agricultural Engineering & Utilization Institute	36	-	1	13	21	1
Wheat & Barley Research Institute	31	-	1	16	14	-
Crops Experiment Station	47	1	-	14	32	-
Honam Crops Experiment Station	30	-	1	4	25	-
Yeongnam Crops Experiment Station	27	-	1	4	22	-
Horticultural Experiment Station	66	-	1	18	47	-
Sericultural Experiment Station	29	-	1	9	19	-
Livestock Experiment Station	43	-	1	15	27	-
Alpine Experiment Station	22	-	1	4	17	-
Jeju Experiment Station	14	-	1	3	10	-
9 Provincial Offices of Rural Development	252	-	-	27	184	41

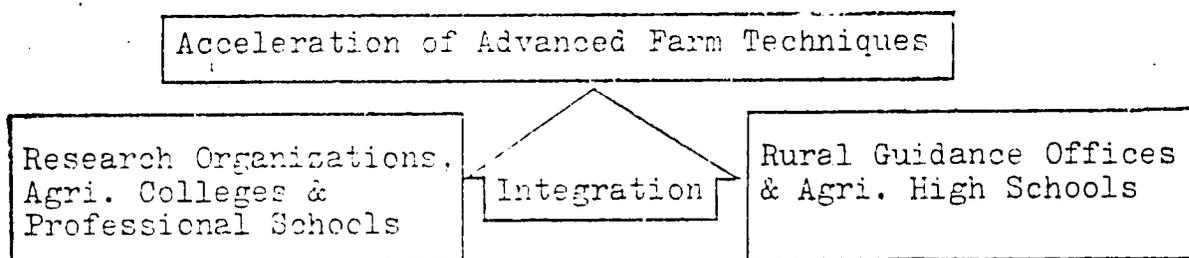
Those who apply for work at any of the Office of Rural Development research institutes must pass a government examination based upon their major fields of study. Performances of all research workers who belong to the grade of 3-B or less, are periodically evaluated by their senior members for a promotion. However, the promotion of the staff above the grade of 3-A is done by the President upon recommendation of the Director General. The Director General and directors of research institutes and stations are responsible for training of their staff members.

V. Institutional Cooperation

In order to promote increased collaboration among research organizations and educational institutions, a Presidential Decree for the National Institutional Cooperation Committee in Agriculture was inaugurated in 1971. This committee is chaired by the Director General and meets twice a year at central as well as at provincial levels. The goal of the institutional cooperation is to increase collaboration among research organizations, agricultural colleges, professional schools, and between rural guidance offices and agricultural high schools.

This year, research on the less-developed disciplines will be emphasized by increasing numbers of concurrent appointed personnel. Joint research projects are to be intensified, increased use of the Office of Rural Development service facilities will be expanded, such as maximum usage of the computer center, and college student field training will be continued.

At the county level concurrent appointments between Rural Guidance Offices and Agricultural High Schools will be expanded. Rural guidance offices will present special technical lectures in agricultural high schools and also provide special field training for high school graduates. "Agricultural Techniques" and the "Rural Development Newsletter", which are examples of technical publications, will be distributed to agricultural high schools.



Item	1976 Achieved	1977 Planned	Item	1976 Achieved	1977 Planned
o Concurrent appointments (persons)	76	85	o Concurrent appointments (persons)	36	39
o Cooperative research projects	148	160	o Guidance workers' lectures (hours)	1,796	3,000
o Research contracts (million won)	0	20	o Field training for high school graduates (persons)	4,306	5,000
o Computer utilization (number of analyses)	8,923	10,000	o Distribution of farm tech. publications	522	2,762
o Number of agri. students trained	814	1,000			

Figure 3. Institutional cooperation.

VI. Research Planning, Evaluation and Utilization of Research Projects

To assist in carrying out the research program properly, interdisciplinary committees were instituted in 1957. There are nine committees as follows:

1. Agricultural Science Research Committee
2. Crop Science Research Committee
3. Horticultural Research Committee
4. Sericultural Research Committee
5. Livestock Research Committee
6. Veterinary Research Committee
7. Agricultural Engineering and Utilization Research Committee
8. Farm Management Research Committee
9. Wheat and Barley Research Committee.

The committees' main functions are to review and analyze each research project, promote research programs where necessary and ensure as far as possible that all resources are used to the best advantage. The committee consists of faculty members from the Agricultural Colleges and Universities and most of the senior research and extension staff from the Office of Rural Development. The committee, upon review, recommends projects to the office for implementation. The committee meets more than three times a year for planning and evaluating of the research projects. About 1,300 projects are annually carried out.

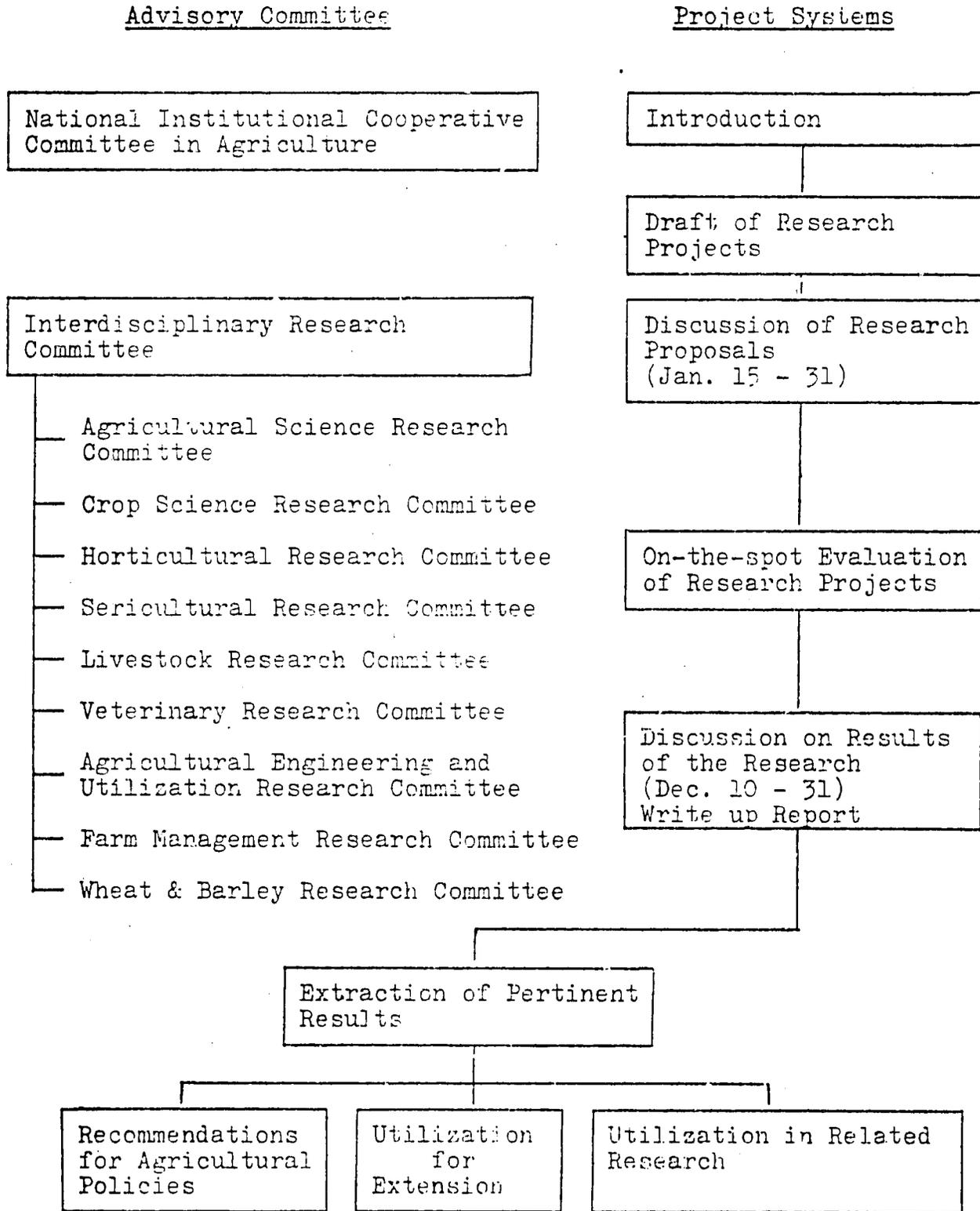


Figure 4. Planning, evaluation and utilization of research projects.

VII. Some Landmark Research Achievements

1. Rice Breeding Organizations

Rice is the staple food crop in Korea. Therefore, it would be helpful to introduce the national rice research organizations.

There are three rice breeding centers in Korea: the Crops Experiment Station at Suweon located in the north and central part of Korea; Honam Crops Experiment Station at Iri in the southwestern part; and Yeongnam Crops Experiment Station at Milyang in the southeastern part. Each station has its own specific objectives related to the environmental and ecological conditions prevailing over its responsible region. However, a coordination of the breeding research is practised at the national level to avoid unnecessary duplication of research activities.

At the Crops Experiment Station, the prime objective includes research in resistance to cold, saline conditions, drought, blast diseases and early maturity.

At Honam Crops Experiment Station, emphasis has been given to the development of rice varieties which are resistant to bacterial leaf blight disease, to poor drainage conditions, and to late transplanting due to harvesting of the preceding barley or wheat crops.

At Yeongnam Crops Experiment Station, the priority objectives are dealing with resistance to virus diseases which are prevailing over this ecological region, and an adaptability to late transplanting resulting from rice-barley or rice-wheat double cropping system.

The desired traits of rice varieties at the three breeding centers are high-yield, early-maturation, cold tolerance, good eating quality, and resistance to the major destructive diseases and insects.

Table 4. Rice breeding organizations.

Station	Location	Main thrust areas
Crops Experiment Station	Suweon (North and Central)	1. Early maturity 2. Cold tolerance 3. Resistance to blast disease 4. Resistance to drought and saline conditions
Honam Crops Experiment Station	Iri (Southwestern)	1. Resistance to bacterial leaf blight disease 2. Resistance to poor drainage conditions 3. Resistance to late transplanting
Yeongnam Crops Experiment Station	Milyang (Southeastern)	1. Resistance to virus diseases 2. Resistance to late transplanting 3. Upland rice

2. Self-Sufficiency in Rice Production

With the development of a dramatic, high-yielding Tongil rice variety in 1971 and its expansive dissemination, rice production has greatly increased as shown in Figure 5.

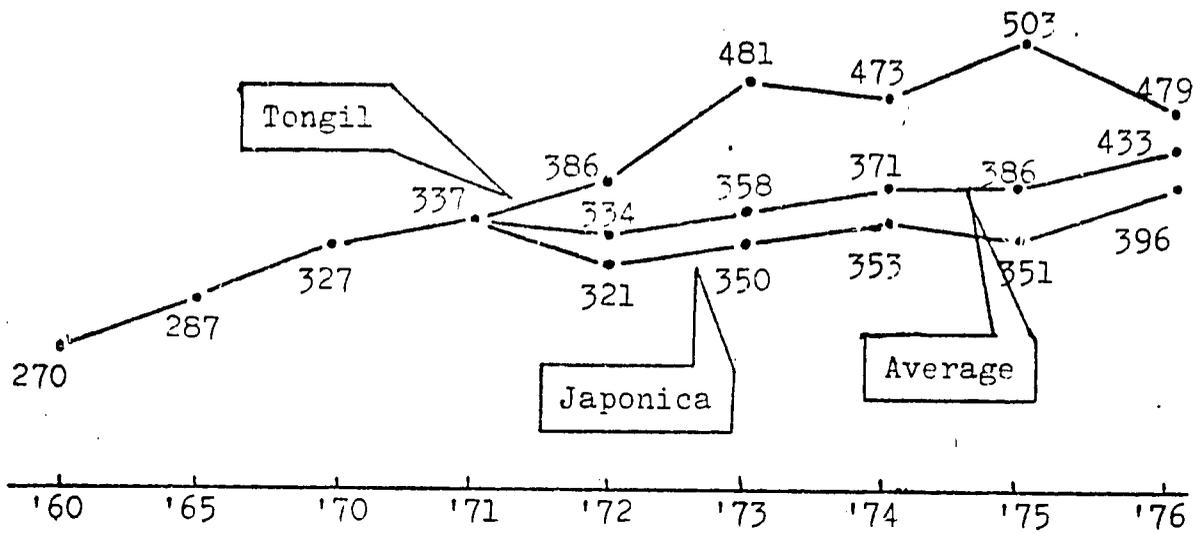


Figure 5. Increase of national average yield by year (kg/10a).

Korea produced a total of 4.45 million metric tons of milled rice in 1974 - the highest yield in the history of Korean agriculture up to that time. This enabled Korea to make a sound foundation for achieving rice self-sufficiency. Furthermore, rice production in 1976 surpassed the national rice demand by 8%. The dissemination of new rice varieties has played a definite role in improving farm technology and increasing the farmers' income.

* In developing and disseminating high-yielding Indica x Japonica rice varieties, the International Rice Research Institute (IRRI) has greatly contributed through an intensified cooperative research program, training of Korean workers at IRRI and assisting the Korean seed increase programs in the Philippines during the winter when rice cannot be grown.

Table 5. Cooperation with the International Rice Research Institute.

Year	Technical exchange		Breeding nursery in winter (lines)	Seed multiplication	
	Training/ Observation (persons)	Invited scientists (persons)		GEU materials (lines)	Variety (M/T)
1962 - '68	16	12	1,329	-	-
1969 - '76	70	51	28,215	57	242 ('74-'77)

The second factor which accelerated increased rice production was the introduction of the cooperative rice farming system from Japan. This system was indeed effective for disseminating the new varieties and related advanced farming techniques. Under the cooperative farming system which was organized at the village level, the members agreed on technical cooperation in accordance with the rice crop calendar and set up a detailed farming schedule.

The third factor was an intensified training of rice farmers. For a successful management of cooperative rice farming and upgrading of the farmers' technology, all the field extension agents were assigned to their respective areas of responsibility to carry out an intensive farmers' training in winter.

The fourth factor was the government's strong support for insuring a high rice price and arousing farmers' interest in growing the high-yielding varieties through an award system for high-yielding farmers. Also the government supplied an adequate quantity

of agricultural materials at right time.

Table 6. Adopted research results in 1977.

Field	Subjects for	
	Policy Making	Rural Guidance Planning
Increased food production	18 items including dissemination of new high-yielding variety, "Suweon 251"	91 items including optimum transplanting time of new variety, "Milyang 23"
Farm income	6 items including dissemination of new high-yielding rape-seed new line, "Mogpo 11"	34 items including dissemination of the new dwarf apple tree
Livestock	7 items including dissemination of medium-size cattle fattening technique	5 items including potato silage fattening
Total	31	130

2. Other Achievements

We have also made substantial improvement in productivity of barley, soybeans, corn, potatoes, vegetables, and fruit trees. In animal industry, we developed a crossbreed between Korean native and Charolais cattle. This hybrid demonstrated a 73% increase in body weight over a 12-month period compared with Korean native cattle. The Korean milk goat, which is a hybrid of the Korean native goat and the introduced Janen goat, produced a 314% increase over traditional annual milk production.

An indigenous forage crop, "Sumbady" was exploited as a promising substitute for concentrate feed grains. Several superior

varieties of forage crops were selected and disseminated to the farmers. New resources such as stevia, mushroom and methane gas have been considerably developed. Some simple and effective attachments for the power tiller are also under development.

In the fields of sericulture and veterinary science, satisfactory progress was made during the last two decades.

VIII. Policy Directions

It is our aim to continue the advancement of the Green Revolution in Korea through the development and dissemination of advanced farming techniques. We have set the following policy directions:

1. Acceleration of the development of food resources
2. Innovation of alternative techniques for increasing rural income
3. Facilitation of "Saemaul" cooperative farming systems
4. Advancement of farming techniques and rural youth training
5. Promotion of institutional and international cooperation, and
6. Improvement of the efficiency of research.

APPENDIX D.1:

"Building Agricultural Research Institutions in India,"
from Ruttan (1980).

The Indian agricultural research system developed primarily in response to the commercial and military interests of the colonial government. During the first decade and a half after independence, its evolution was strongly influenced by American aid programs. Its administration during both the colonial period and post-colonial period has been complicated by the division of responsibilities of a state-federal system of government in which agriculture has been designated as a state subject but in which primary fiscal capacity is in the hands of the central government.

The colonial origins¹⁹

The Agricultural College and Research Station at Coimbatore started as a model farm in 1868. It was one of the two major centers for research and development on sugar cane in the British colonial system. It set the stage for modern sugar cane breeding in the 1920's by the development of tri-hybrid canes which incorporated climatic adaptability with resistance to disease. The Coimbatore varieties have since become an important source of germplasm for many national sugar cane improvement programs.

The Indian Veterinary Research Institute at Izatnagar traces its origins to the establishment of a Bacteriological Research Laboratory in veterinary science in Poona in 1889 in response to veterinary problems of the Indian army. The Indian Agricultural Research Institute was established in 1905 at Pusa in Bihar, partly with American philanthropical assistance. It was later (1936) moved to New Delhi which is now the central research institute and graduate training center of the Indian Council of Agricultural Research. A number of other research institutes were also established under the Ministry of Food and Agriculture during the colonial period.

These included the Central Rice Research Institute (Cuttack), the Central Potato Research Institute (Simla), the Central Inland Fisheries Research Institute (Barrackpore) and the Central Marine Fisheries Research Institute (Mandapam), the National Dairy Research Institute (Bangalore and Karnal).

The constitutional changes in 1919 which made agriculture a provincial subject made it necessary to set up a central agency to coordinate the research. An Imperial Council on Agricultural Research was established in 1929. Though entrusted with wide responsibilities, the Council never played a prominent role in coordinating and promoting agricultural research. The major thrust of agricultural research during the period was assumed by a series of Central Commodity Committees that were established to promote research, development, extension and marketing of commercial (primarily non-food) crops with substantial export potential. Research was supported primarily by special cesses (taxes) on marketing or by grants-in-aid from the Government of India. Research on food crops other than rice and wheat was relatively neglected.

Research organization after independence

Following independence a number of expert teams were organized to review the Indian agricultural research system and make recommendations to the government. These included (a) The First Indo-American Team on Agricultural Research and Education (1955); (b) the Second Joint Indo-American Team on Agricultural Education, Research and Extension (1959); (c) the Agricultural Administration (Malabar) Committee; (d) the Committee for Agricultural Universities Legislation (1962); and (e) The Agricultural Research Review Team (1963). The First Indo-American Team concluded that

the research institutes were, in general, ineffective in producing scientific or administrative leadership for the large number of central and state research efforts. The institutes were organized as subordinate offices of the Ministry of Food and Agriculture and were individually responsible to different sections or administrative heads in the Ministry. Not even the research supported directly by the Ministry was subject to adequate internal coordination.

One major result of the report of the two joint Indo-American teams was to reinforce the effort to establish a major research-oriented agricultural university in each state. The need for an agricultural university system had been recognized in the 1949 report of the University Education Commission headed by Dr. S. Radhakrishnan. The first agricultural university came into existence at Pantnagar, Uttar Pradesh, in 1960. The university was established on a large land grant (at Pantnagar) and received very substantial assistance from the Indian Council of Agricultural Research and the U.S. Agency for International Development. USAID contracted with the University of Illinois to provide technical and scientific support. By the time of the 1963 agricultural research review, agricultural universities had also been established in Udaipur in Rajasthan, at Bhubaneswar in Orissa, and at Ludhiana in the Punjab.

Little else of significance had been accomplished as a result of the several review reports until after the report of the 1963 Agricultural Research Review Team. This team, composed of eminent scientists from India, the United Kingdom and the United States was appointed during a period of increasing concern about India's capacity to meet its food requirements. The team was appointed on October 31, 1963 and submitted its report on March 19, 1964. Within a year's time, the Government of India had decided to substantially reorganize its agricultural research system.

The first step was the reorganization of the Indian Council of Agricultural Research into a central agency with authority for coordinating, directing and promoting agricultural research in the whole country. All of the central research institutes which had been under the direct administrative control of the Department of Agriculture or the Department of Food were transferred to the ICAR. The Commodity Committees were also abolished and their research put directly under the ICAR. The ICAR also is the source of central funding for the research activities of the agricultural universities. After some delay an Agricultural Research Service separate from the civil services administration of the Public Services Commission was established. It was hoped that this would create an opportunity to develop personnel policies and pay scales consistent with the needs of a scientific organization. The all-India coordinated research programs²⁰

A major administrative device for coordinating agricultural research in India under the reorganized ICAR has been the All-India Coordinated Research Programs. The concept was developed during the late 1950's and early 1960's as a result of collaborative experience with the Rockefeller Foundation in the All-India Coordinated Maize Improvement Project. Maize is a minor crop in India. However, the successful experience of developing a coordinated program involving the central Agricultural Research Institute state research stations and agricultural universities lead to the establishment of other coordinated research programs.

The All-India Coordinated Rice Improvement Project represents a useful example of how the coordinated programs are organized. The Central Rice Research Institute, established in 1946 at Cuttack, was the first major

federal rice research effort. During the Third Five Year Plan regional rice research centers were established by the Center government in the several states. The All-India program was initiated in 1965. A National Coordinating Centre was established at Rajendranagar in Hyderabad. The program incorporated research efforts at more than 100 stations located throughout the country. The Rockefeller Foundation lent the program a senior scientist to serve as joint coordinator. Four scientists from the International Rice Research Institute, funded by a contract between the USAID and the ICAR, were also attached to the program.

The objectives of the coordinated rice breeding program included breeding varieties suited to different maturity regions (90 to 170 days); resistance to pests and diseases, and for consumer preferences. The breeding effort was located at 24 centers in 7 different agro-climatic zones. Testing for local adaptability was conducted at 108 stations throughout the country.

The Indian agricultural universities²¹

The establishment of the agricultural university system, which began with the Uttar Pradesh Agricultural University (now the C. B. Pant University of Agriculture and Technology) has been termed in the 1978 report of the Review Committee on Agricultural Universities, "one of the most significant landmarks in the history of agricultural education in India."²² It has also been criticized by a long-term observer of Indian rural development as an example of "thoughtless transfer of inapplicable experience from one civilization to another."²³

The agenda that the leaders of the movement to establish an agricultural university system set for themselves in the early 1960s was monumental. They visualized the establishment in each state of an agricultural university with statewide responsibility for teaching, research and extension. The process of establishing an agricultural university in each state is, except for a few of the smaller states, essentially complete. In 1978 twenty-one agricultural universities, some with several campuses, had been put in place.

The 1978 Review Committee judged the progress of the educational programs at the new agricultural universities to be satisfactory. It was concerned about the quality of undergraduate education at some of the multi-campus institutions and cautioned against too rapid proliferation of Ph.D. programs.

The proposed transfer of state research responsibilities to the agricultural universities has, however, confronted serious problems in a number of states. In those states, such as Punjab, where the state governments immediately transferred state-wide research functions and facilities to

the new universities, strong state research programs have developed. In a number of states however, bureaucratic in-fighting has delayed the transfer of facilities and support. The Government of Rajasthan took ten years to transfer research to Udaipur University and still retains responsibility for irrigation research. The Government of Madhya Pradesh has established a new rice research station at Raipur as an autonomous institution unrelated to the agricultural university. And even in Uttar Pradesh the state government has insisted that its obligations for support of research at the G. B. Pant University have been satisfied by its initial land grant.

The Indian council of agricultural research

The Indian Council of Agricultural Research is, in addition to the several state governments, the major source of research support for the agricultural universities. ICAR support averages about 36 percent of agricultural university research support. In a number of states, it accounts for more than half of total support. The Council also plays a major role in coordinating state and center research activities through the All-India Coordinated Research Program.

The Council is also directly responsible for the research conducted at the Central Research Institutes. About 3,500 scientists are employed directly by the Council or by the institutes directly responsible to the Council. In the past, it has been argued that the effectiveness of Indian agricultural research has been hampered by a heavy-handed administrative bureaucracy and by a civil service system that failed to distinguish between scientific and administrative capacity.

Since the mid-1970s, a number of steps have been taken to improve both

the management of research and the research environment. The role of the Director-General of the ICAR has been enhanced through his appointment as Joint Secretary to the Government of India with administrative responsibility for the newly established Department of Agricultural Research and Education in the Ministry of Agriculture and Education. In 1975 the ICAR was granted authority to restructure its personnel policies. The scientific staff is now organized into an Agricultural Research Service which is able to grant more appropriate recognition to scientific accomplishment.²⁴

A retrospective and prospective view

The Indian agricultural research system is clearly one of the half dozen significant national agricultural research systems in the world. It has been, if estimates of the rates of returns to research investment have any meaning, a highly productive research system.²⁵ Since independence, it has gone through a period of consolidation in which the disparate institutions inherited from the past were molded into a national agricultural research system.

The Indian system has also gone through a period of intensive institutional innovation as it has put in place, in a matter of only twenty years, an agricultural university system patterned on the land grant university model of the United States. Many of the problems which this innovation confronted are due to the imposition of these new institutions on the states by the center. In the United States, they were, by and large, initially developed by the states and then later supported by funds from the federal government. With these two accomplishments well on the way to completion, the Indian agricultural research system is now shifting toward a stronger emphasis on the quality of its staffing and its program. The new administrative reforms were undertaken with this objective. Given the complexity

of Indian agriculture and the size of the research system, this task will not be easy. Additional means will have to be sought to encourage a flowering of the intellectual vigor, the scientific capacity, and the research entrepreneurship of which India has such abundant potential.

APPENDIX 1.2

The Indian Agricultural Research System

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The economic performance of the agricultural sector in most countries has been largely determined by the organised research and extension activity in those countries. An increasing number of studies have established an association between productivity growth (as conventionally measured) and the level of such activities.¹ The term 'non-conventional' factors has crept into the related literature to describe these activities.

At present, a complete compilation of the level of investment in agricultural research is not available either for all-India or for the major states in India. This paper develops such a compilation, in the form of time series data on research investment in each major state from 1950 to 1968.

The primary purpose in developing these data is to provide a basis for studies of productivity gains in Indian agriculture. The authors realise that the enterprise is fraught with difficulties, as witness the notes to the tables. It has been possible, however, to obtain a reasonably complete reconciliation between two independent data sources — which has been the basis for reporting them here. The authors present this report in the hope that it will induce further studies which will provide more accurate data on these activities in the future.

Brief Organisation History²

THE agricultural research system in India is a large and complex one. Furthermore, it has changed greatly in organisational form and in research emphasis in the post-1950 period.

The earliest institutions for research in agriculture were founded in the last quarter of the nineteenth century. During the pre-Independence period, research activities focused mainly on commercial crops such as sugarcane, coffee, cotton, tea, jute, and to a lesser extent on rice. Organisationally, there were various central research institutes under the Ministry of Food and Agriculture and central commodity committees on sugarcane, tobacco, oilseeds, jute, coconut, lac and arecanut. There was little central co-ordination of these activities, however, though, in addition, each state operated its own, usually small, research stations. The research of that period was, however, of considerable significance in the cash crops — in particular, in sugarcane.³

The period after Independence has brought successive changes in the agricultural research system of the country. That the government has been very conscious of the need for these changes is seen in the fact that four high-powered committees have recommended changes in 1955, 1959, 1962 and 1963. The main thrust of the reorganisation has been twofold:

- (i) The Indian Council of Agricultural Research was revamped in 1964, bringing under its aegis (though not as subordinate institutions) the various research institutions operated by the commodity committees and all the central research institutes.

- (2) Since the late fifties, an agricultural university has been established in almost every state — the earliest being the UP Agricultural University at Pantnagar, the Punjab Agricultural University at Ludhiana, the Orissa University of Agriculture and Technology, and the University of Udaipur in Rajasthan. Most of these Universities have now taken over a large portion of the state research systems from their respective Departments of Agriculture.

It is this reorganisation that has made

possible the All India Co-ordinated Schemes in maize, wheat, rice and agronomy, among others. The research system is still, of course, in a state of flux and we expect that many more changes will accompany its inevitable expansion.

ALL-INDIA ESTIMATES

Table 1 summarises our efforts. It presents our best estimates of expenditures (in constant 1968 rupees) of research devoted to ordinary crop pro-

TABLE 1: INDIAN AGRICULTURAL RESEARCH EXPENDITURES, 1950-1968

(Crores of Constant, 1968, Rs)

Year	Crop Research	Lvsrk Research	Speciality Crops*	Total	Research** Spending as a Per Cent of Agricultural Production
1950	3.49	1.06	.63	5.18	0.07
51	3.57	1.11	.65	5.33	0.07
52	3.72	1.15	.67	5.54	0.07
53	3.81	1.26	.69	5.76	0.07
54	3.94	1.45	.84	6.23	0.08
55	4.50	1.85	.88	7.23	0.09
56	4.86	1.97	.98	7.81	0.10
57	5.23	2.11	1.01	8.35	0.10
58	5.71	2.24	1.05	9.00	0.10
59	6.13	2.38	1.08	9.59	0.11
60	7.18	2.50	1.10	10.78	0.12
61	7.45	2.64	1.11	11.20	0.12
62	9.00	2.78	1.11	12.89	0.14
63	9.45	2.80	1.11	13.36	0.14
64	10.08	2.91	1.15	14.14	0.14
65	10.80	3.00	1.15	14.95	0.17
66	11.99	3.00	1.15	16.14	0.18
67	12.73	3.00	1.15	16.88	0.17
68	13.56	3.00	1.15	17.71	0.17

Notes: *Includes coconuts, tea, arecanut, lac and jute. Other crops included in crop research.

**Approximated from Indian Agriculture in Brief.

duction, to livestock production, and to specialty crop production. This series is compiled from our state estimates which are detailed in the Appendix to the paper. As the notes to the Appendix Tables indicate, certain adjustments — many of them 'judgemental' — had to be made in the course of the compilation. We feel that the adjustments are reasonable and that the resultant series reported in Table 1 is not subject to great error.⁴

Table 1 clarifies the major trends in research investment. Perhaps the most striking feature is the substantial real increase in investment in crop research, from Rs 3.5 crores to Rs 13.5 crores over the period. In absolute terms, the largest part of the increase has occurred in the second half of the 1950-68 period. Taking Robert Herdt's [6] estimate of roughly Rs 4.3 crores as the spending of the Central Government in the early 1960s, we have an indication that the states spent roughly one-half of the total. This figure has probably increased to roughly two-thirds by 1968.

It is also quite apparent that the relative weight of both livestock and specialty crop research has declined over the period — from 32 per cent in 1950 to 23 per cent in 1968. Research on foodgrains has increased most rapidly over the period. The percentage of agricultural product value invested in research activities rose substantially over the period, but continues to be low by international standards. Most developed countries invest approximately one per cent in agricultural research.

In Table 2 we present our estimates of the research expenditures which were directly related to specific crop commodities in 1968. These estimates are partially based on the data in Table 4.⁵ The Table shows that the commercial crops — cotton, jute, and sugarcane — continue to receive heaviest

TABLE 2: COMMODITY ORIENTATION OF INDIAN AGRICULTURAL RESEARCH EXPENDITURES, 1968

	Rice	Wheat	Maize	Millet's	Sugar	Cotton	Jute
Estimated expenditures (Rs crores)	.74	.56	.16	.24	.52	.47	.12
Per cent. of commodity value	0.035	0.082	0.080	0.042	0.10	0.22	0.15

emphasis, but to an extent far less than would have prevailed in 1950 (or in 1950 when commercial crop research dominated the programme). Actually, we do not have detailed data on commodity values for lac, tea, coconuts, arecanut, or spices, but these commodities appear to have higher research expenditures per rupee worth of product than those in Table 2.⁶

RESEARCH OUTPUT: PUBLICATIONS

Tables 3 and 4 present data based on two completely independent sources. They are, in fact, not measures of research investment, but of research output. Table 3 is a tabulation of publications abstracted in three international abstracting journals; *Plant Breeding Abstracts* [10], *Dairy Science Abstracts* [2], and *Biological Abstracts* [1].⁷ Table 4 is based on a tabulation of publications from *Indian Science Abstracts* [7]. Both Tables provide an important check on the expenditure data.

Table 3 provides a check on the change in research investment over time. Our expenditure data indicated that investment in the 1962-68 period was three times as great as in the 1948-54 period. Table 3 indicates that crop research publications increased by a factor of only 2.3 over the same period.

This does not seem unreasonable, since the real costs of doing research have tended to increase in almost all countries over this period. The publications data suggest a higher share for livestock-oriented research than is suggested by our expenditure data, but this is partially due to a relatively high publications-to-scientist ratio in dairy-related work.

The publications data also show a relatively high concentration of research on cotton and sugar. They indicate that the research concentration is becoming more equitable between commodities over time, as research per unit production of rice, wheat and millets — the major foodgrains — has increased substantially over time. We do not have good data on research on pulses and oilseeds, but our scanty information indicates that very little research on pulses has been undertaken.⁸

Tables 4 and 5 present data on a state basis. The two sets of data are reasonably consistent with each other. Table 4 allows a crude assessment of the statewide allocation of commodity research. Overall, there is a reasonable correlation between the location of research and the location of production. The five leading rice producing states — West Bengal, Bihar, Andhra Pra-

TABLE 3: COMMODITY ORIENTED INDIAN AGRICULTURAL RESEARCH PUBLICATIONS ABSTRACTED IN INTERNATIONAL ABSTRACTING JOURNALS, 1948-1968

	Rice	Barley and Wheat	Maize	Millet's	Sugar	Cotton	Phyto-Path	Soils	All Crop	Lvsik
(1) Orientation of Publications										
1948-54	258	61	53	86	255	357	292	123	1564	512
1955-61	274	170	70	139	245	394	450	189	1962	607
1962-68	517	253	101	264	259	435	1050	331	3456	1094
(2) Average Annual Publications per \$100 Million Commodity Value.										
1948-54	2.0	1.4	4.9	1.6	6.6	18.8	—	—	3.9	—
1955-61	1.6	2.5	4.5	2.0	5.1	19.4	—	—	3.6	—
1962-68	3.0	4.0	5.5	4.4	3.9	16.3	—	—	6.0	—

TABLE 4: COMMODITY ORIENTED PUBLICATIONS BY MAJOR INDIAN STATE: ABSTRACTED FROM INDIAN SCIENCE ABSTRACTS 1965-1970

State	Rice	Wheat	Maize	Millets	Sugar	Cotton	Total	Publications per Community Development Block
Andhra Pradesh	49	4	3	21	8	13	238	.69
Assam	4	1	0	0	0	0	66	.41
Bihar	31	22	17	5	26	4	344	.60
Gujarat	4	2	0	4	0	8	120	.54
Kerala	20	2	0	5	1	3	186	1.25
Madhya Pradesh	12	30	5	9	6	13	212	.51
Maharashtra	13	6	1	16	11	18	265	.62
Mysore	11	5	1	16	5	15	311	1.16
Orissa	90	0	3	2	1	0	168	.55
Punjab-Haryana	20	41	15	22	35	26	589	2.97
Rajasthan	9	27	12	38	6	14	496	2.13
Tamil Nadu	82	5	2	66	47	60	631	1.68
Uttar Pradesh	30	51	31	18	142	22	1264	1.41
West Bengal	74	4	3	2	5	1	360	1.05
Delhi	48	106	26	39	15	27	870	—
All India	468	285	115	258	298	260	6687	—

desh, Orissa, and Tamil Nadu — produce 60 per cent of India's rice and carry out 70 per cent of the rice research in India.

Uttar Pradesh, Punjab and Haryana produce 65 per cent of the nation's wheat, and undertake 32 per cent of the research. When the research done in Delhi is included, however, this region accounts for 69 per cent of wheat research. The states of Uttar Pradesh, Bihar, Punjab, and Rajasthan, produce 63 per cent of the maize and perform 65 per cent of the maize research.

Research on millets is less concentrated in the leading producing states. Maharashtra, Mysore, Madhya Pradesh, and Andhra Pradesh, produce over two-thirds of the millets, but account for only 25 per cent of the research. Uttar Pradesh, the leading sugarcane producing state, conducts almost half of the sugarcane research in the country. The

other significant research states, Tamil Nadu, Punjab-Haryana, and Bihar produce less than 20 per cent of the nation's sugar. Gujarat, Maharashtra, and Punjab-Haryana, produce about 75 per cent of the cotton in India and perform only 20 per cent of the cotton research (30 per cent if Delhi is included).

These comparisons have obvious limitations, but it should be noted that the publications data in Table 4 are quite consistent with those in Table 3, even though independent sources were used. The publications data are less consistent, on a commodity basis, with the expenditure data in Table 2. We would not, however, expect a high degree of consistency here, since we know that there are systematic differences in publishing standards in different fields: It is simply easier to publish in some fields than others.

Our final set of data are in Table 5.

There we present, for selected years, annual research expenditures on crop production only (excluding specialty crops), by states. These data may be compared with those in Table 4 to obtain a crude consistency check. The Table shows that Uttar Pradesh is the leading research state by a wide margin. It is, of course, also the largest state, geographically and economically. We need some basis for comparison if we are to say anything about research intensities. The proper 'denominator' would be related to the extent and nature of the problems to be solved. We know that the problems facing agricultural researchers are related to climate factors which differ greatly over India. They are also partly related to the economic organisation of production. In Table 5 (and in the right hand column of Table 4), we have deflated research by the number of delineated community development blocks in each state.*

TABLE 5: CROP RELATED EXPENDITURES BY STATES, 1953-1968

State	Total Expenditures				Expenditures per Community Development Block			
	1953	1958	1963	1968	1953	1958	1963	1968
	(Crores of Constant, 1968, Rs)							
Andhra Pradesh	.353	.440	.569	.929	.79	.90	1.28	2.09
Assam	.119	.122	.122	.128	.74	.76	.76	.80
Bihar	.300	.450	.548	.548	.52	.78	.95	.95
Gujarat	.180	.320	.475	.900	.80	1.43	2.11	4.01
Haryana	.120	.188	.349	.496	1.46	2.29	4.25	6.05
Kerala	.050	.075	.128	.180	.35	.51	.90	1.26
Madhya Pradesh	.161	.171	.390	.595	.39	.41	9.3	1.43
Maharashtra	.176	.426	.593	1.390	.42	1.00	1.30	3.27
Mysore	.328	.437	.450	.720	1.22	1.63	1.68	2.68
Orissa	.245	.245	.548	.583	.80	.80	1.78	1.90
Punjab	.204	.320	.594	.845	1.76	2.76	5.12	7.28
Rajasthan	.113	.166	.735	.740	.49	.72	3.16	3.19
Tamil Nadu	.562	.700	.907	.919	1.50	1.87	2.42	2.61
Uttar Pradesh	.444	.591	1.452	1.712	.49	6.6	1.62	1.91
West Bengal	.100	.231	.364	.364	.29	.68	1.07	1.07
Delhi	.500	.890	1.290	2.451	—	—	—	—

Alternative deflators, such as the value of agricultural output, or harvested acreage would not alter the pattern in Table 5 greatly.

As the Table indicates, Punjab and Haryana have been investing clearly the most in research over the entire period (the separation prior to 1964 is in proportion to the number of blocks). In 1953 and 1958, Tamil Nadu ranked next, followed by Mysore. By 1968, Gujarat, Rajasthan and Maharashtra moved ahead of both of them. In 1968, the five states with the lowest research investment per community development block were: Assam, Bihar, West Bengal, Kerala and Madhya Pradesh. The latter three states ranked among the lowest five throughout the period, while Assam and Bihar ranked somewhat higher in 1953. Uttar Pradesh, Rajasthan and Maharashtra showed the greatest relative improvement over time.

The total publications data in Table 4 include speciality crop publications, and so are not strictly comparable to the expenditure data in Table 5. For example, West Bengal and Kerala rank higher when the speciality crop research is included. Other than these two states and Gujarat, however, the publications data and the expenditure data (for 1963) are well correlated.

In this paper, we will not attempt to relate the research programme to the economic performance by states. We will only note the obvious. By any standards, the leading states in economic performance during the 1956-71 period have been Punjab-Haryana and more recently Gujarat. The states with the poorest economic performance in the decade are also those lowest in the research ranking.

The Appendix provides state expenditure time series and notes on the calculations. We should again note that this is in no sense an 'official' data series. It contains numerous judgments on our part. We developed it because an official series does not exist and will not be produced for the time period in question. Even today, no official agency of the Indian Government is systematically collecting annual data on this activity. It is our hope that this set of data will be improved through criticism by others and through provision of further information.

Appendix

TABLE AND NOTES

The Appendix Table provides state-wise time series data on annual crop research expenditures. The basic data

source is *The Directory of Scientific Research Institutions in India* (11). This directory lists data for some 285 research institutions working on agricultural research. It does not include all existing research institutions. Some rather obvious omissions were several of the new Agricultural Universities. We have estimated the budgets of these Universities by comparing them with Universities for which data do exist. Most of the Universities are now administering the state research systems, which were expanded substantially between 1950 and the middle-1960s. The directory did not always provide separate data for each of the state stations, as it was not clear in some cases whether the University data included the state station data.

The 285 institutions, for which data were provided, really included more than 285 research units. That is, sub-stations were not usually treated as separate units. The total number of separate research or research-type units may exceed 500 and the directory may well have missed 100 or so. By and large, the omission of the smaller stations is not too serious. From the data on small stations that we do have, we can get a pretty good idea of their budget and staffing patterns. They would typically have budgets of Rs 25,000-50,000 and research staffs of two to five or so. Even 100 such stations would only account for 2 per cent of the total research budget.

The budgets reported in the directory need not reflect real research, of course. Most Universities, Institutes, and Colleges, reported budgets which included some teaching and extension work. On the basis of data from ICAR — which indicated that, of the total budget of IARI, only 75 per cent was actually spent on research — we made the following adjustments:

- (1) The budgets reported by all Research Institutes and Agricultural Universities (not research stations however) were multiplied by 0.75 to estimate the research component.
- (2) The budgets of agricultural colleges were multiplied by 0.5 to obtain the research component. This was arbitrary and based on the relatively larger teaching activity in colleges. In fact, our impression is that these colleges conduct very little research.

With these modifications, including the estimation of the budgets for universities which did not provide data, we obtained the 1968 figures. The next step was to construct a time series for each state. This was done in two alternative ways, from two independent

sources and represents the major check on our data.

We construct one series from the directory data, as follows:

- (1) Universities and Institutes established after 1950 were assumed to have had a budget one-half of the 1968 level at establishment, rising to the 1968 level over a period of five years.
- (2) Large Universities and Colleges and Institutes established prior to 1950 were assumed to have had a 1950 budget 1/2 the 1968 budget, rising to the 1968 level by 1960.
- (3) All small stations and Institutes with budgets less than Rs 10 lakhs were assumed to have maintained their 1968 budget levels from the data of establishment. (For example, state stations and PIRRCOM stations).

A second time series was constructed by examining the budgets of each state in detail. These budgets have important elements of inconsistency, and early work with aggregate budget categories convinced us that the expenditures under the general headings were of little value. All states have two such headings: (1) *Experimental Farms* and (2) *Agricultural Experiments and Research*. On examination of the detailed budgets, it becomes quite clear that much non-research activity is included in these budgets. In fact, they overstated the research expenditures by approximately a factor of 2. Furthermore this overstatement was not consistent across states.

We thus had no alternative, but to go through the detailed budgets for each state for several years and select the obvious research expenditures by the state governments. We also identified payments to the states by the central government through ICAR and the payments made by the various Central Commodity Committees. This involved some judgments, but most non-research activity, such as fertiliser schemes or extension activity, was obvious.

We examined the two alternative series for major inconsistencies. Most inconsistencies were obvious, such as missing University budget data. When these were checked we found a surprisingly good correlation between the two series. For the early 1960s, the two series were within 10 per cent of each other for all states.

A final modification was made on the grounds that for the late 1960s the Directory data were most reliable, and that for the early 1960s the state budget data were most reliable. The Directory series was modified for several states for the early 1950s, to bring it in line with the budget data and this is the final series on which the paper is based.

ANNUAL AGRICULTURAL RESEARCH EXPENDITURES STATE (ADJUSTED)

(Rs. '000)

	Andhra	Assam	Bihar	Gujarat	Kerala	M P	Maha- rashtra	Mysore	Orissa	Rajasthan	Tamil Nadu	UP	West Bengal	Haryana	Punjab	Delhi
1950	3,530	1,187	3,000	1,796	392	1,429	1,555	3,115	2,451	1,112	5,984	3,731	797	1,069	1,821	5,000
51	3,530	1,187	3,000	1,796	449	1,528	1,654	3,216	2,451	1,112	5,375	3,731	797	1,069	1,820	5,200
52	3,530	1,187	3,000	1,796	502	1,528	1,764	3,216	2,451	1,112	5,495	4,439	984	1,070	1,821	5,500
53	3,510	1,187	3,000	1,796	502	1,613	1,764	3,276	2,451	1,131	5,615	4,439	984	1,200	2,012	5,600
54	3,510	1,187	3,000	1,847	502	1,613	1,764	3,461	2,451	1,116	5,795	4,764	984	1,329	2,265	5,800
55	3,711	1,187	3,000	2,000	502	1,613	2,689	3,461	2,451	1,634	6,135	4,892	1,004	1,471	2,514	6,700
56	3,711	1,187	3,500	2,400	556	1,613	4,298	3,558	2,451	1,659	6,312	5,478	1,004	1,659	2,624	7,200
57	3,347	1,224	4,000	2,800	556	1,613	4,260	4,250	2,451	1,659	6,818	5,657	1,059	1,720	3,119	7,700
58	4,398	1,224	4,500	3,200	728	1,708	4,260	4,366	3,000	1,659	7,001	5,912	2,309	1,878	3,197	8,300
59	4,398	1,224	5,000	3,600	728	1,738	4,260	4,411	3,000	3,543	7,416	5,932	2,786	1,952	3,323	8,900
1960	5,333	1,224	5,500	4,000	728	3,597	4,281	4,411	4,000	3,543	8,377	10,461	3,011	1,979	3,371	9,500
61	5,333	1,224	5,479	4,233	728	3,597	5,818	4,461	4,000	3,543	8,577	10,176	3,011	2,013	3,427	10,578
62	5,631	1,224	5,479	4,696	775	3,823	5,818	4,461	5,475	7,181	8,777	12,645	3,636	3,487	5,917	11,500
63	5,691	1,224	5,479	4,746	1,281	3,839	5,928	4,500	5,475	7,348	9,070	14,520	3,636	3,487	5,938	12,902
64	6,892	1,224	5,479	4,765	1,357	5,917	5,928	4,526	5,475	7,348	9,300	14,520	3,636	3,487	5,938	15,000
65	7,492	1,224	5,479	4,793	1,357	5,917	5,928	7,197	5,829	7,393	9,511	14,520	3,636	4,225	7,193	17,000
66	8,092	1,224	5,479	6,300	1,800	5,946	9,928	7,197	5,829	7,393	9,778	17,123	3,636	4,225	7,193	19,500
67	8,692	1,284	5,479	8,000	1,800	5,946	9,928	7,197	5,829	7,393	9,778	17,123	3,636	4,961	8,448	22,500
68	9,292	1,284	5,479	9,000	1,800	5,946	13,928	7,197	5,829	7,393	9,778	17,123	3,636	4,961	8,448	24,513

Notes: Specific Adjustments

- Andhra Pradesh** (1) Adjustments made to college and university data.
(2) The 1950 to 1960 Directory series was scaled downward by Rs 850,000 to make it consistent with State Budget data.
- Assam:** (1) The Tea Research expenditures are not included in the series (they are included in the speciality crops series Table I).
(2) Assam Agricultural University is not included in the series. No estimate of the contribution was attempted.
- Bihar:** (1) 1950-1955 expenditures based on budget data. 1955-60 interpolated between budget and Directory figures
- Gujarat:** (1) Budget Adjustment for 1950-1955 — Interpolations to Directory figures 1955-60.
- Kerala:** (1) Expenditures for rubber, coconut and arcanut included in speciality crops series.
- Madhya Pradesh:** (1) Series consistent — standard adjustments.
- Maharashtra:** (1) Estimates of expenditures for Poona and Nagpur Agr. Colleges made. 1956 (Rs 750,000), 1950 (1500), 1968 (11,000) interpolation in the intervening years. [These are probably a little high.]
- Mysore:** (1) Arcanut and coffee research included in speciality crops.
- Orissa:** (1) Budget data on State research stations added to Directory series. (Rs 5,77,000 in 1968, Rs 2,22,000 prior to 1964).
- Rajasthan:** (1) University adjustment is 50 per cent instead of 75 per cent since it is not an Agricultural University.
- Tamil Nadu:** (1) 50 per cent of Faculty of Agricultural Annamalai University, S Arcot estimated to be research expenditure.
- Uttar Pradesh:** (1) Estimated research expenditures on APAU, Pantnagar of Rs 7,500,000 based on PAU, Ludhiana budget.
- West Bengal:** (1) Birla Agricultural College budget estimated to be the same as Bihar Agricultural College.
- Punjab-Haryana:** (1) The composite series prior to 1965 was divided by the ratio of Community Development Blocks in the two States.

[The authors have relied heavily on two main sources in the compilation of research expenditures by state. They are: (1) *Directory of Scientific Research Institutions in India, 1969*, T S Rajagopalan and K Satyanarayana, Indian National Scientific Documentation Center, Delhi.

(2) The Annual Budget reports of each State.

In addition, they have utilised three other sources for supplementary data:

(i) The Annual Reports of the Indian Council of Agricultural Research.

(ii) An unpublished paper by Robert Herdt, "Agricultural Research Expenditures in India", University of Illinois, mimeo, 1970.

(iii) *Agricultural Research in India*, M S Randhawa, ICAR, 2nd edition 1963.

These latter sources do not provide information on the research supported by and performed by state government organisations. They are, however, valuable references to the work sponsored by the Central government.

The authors are indebted to V S Vyas for helpful comments.]

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Notes

1 See Fishel [4], for a summary of several studies. Also Hayami and Ruttan [5].

2 See Albert H Moseman, editor, [9] for a discussion of research systems in India and other Asian countries.

3 See Evenson, Houck and Ruttan [3] for a discussion of the contribution of Indian Sugarcane Research.

4 The closest agreement between the two data sources occurred in the early 1960s. We would judge that the plausible error from omission is unlikely to exceed 10 per cent for this period and perhaps 20 per cent for the earlier period.

5 See page 9.

6 Our estimates are that between Rs 50 and 6 million rupees were spent on tea research in 1968, 1.3 on lac; 1.9 on coconut, and 1.0 on areca-nut.

7 See Evenson and Kislev [8] for complete details and a comparison with other countries.

8 R Herdt [6] provides evidence that the Central Government does little research on pulses.