

10. To exempt Japanese nationals from customs duties, internal taxes and another fiscal levies which may be imposed in the Republic of Indonesia with respect to the supply of the products and the services under the verified contracts.
11. To accord Japanese nationals whose services may be required in connection with the supply of the products and the service under the verified contract, such formalities as may be necessary for their entry into the Republic of Indonesia and stay therein for the performance of their work.
12. To provide the space necessary for such construction as temporary offices, working areas, stock yards and others.
13. To bear all expenses, inclusive of Value Added Tax in the Republic of Indonesia other than those to be borne by the grant aid, necessary for the construction of the facilities as well as for the transportation and installation of the machinery and equipment.
14. To maintain and use properly and effectively the facilities constructed as well as equipment, provided under the Grant.
15. To assign personnel according to the proposed Staffing Plan for the Project.

K.T.

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APPENDIX II

MINUTES OF DISCUSSION
ON
THE DRAFT REPORT OF THE BASIC DESIGN STUDY
ON
THE RICE PEST AND DISEASE FORECASTING AND CONTROL PROJECT
PHASE III
IN
THE REPUBLIC OF INDONESIA

In response to the request of the Government of the Republic of Indonesia for Grant Assistance for the Rice Pest and Disease Forecasting and Control Project (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Republic of Indonesia the team headed by Mr. Kanji Tamagawa, Deputy Director of Plant Protection Division, Ministry of Agriculture, Forestry and Fisheries from 21st December, 1986 to 27 th January, 1987.

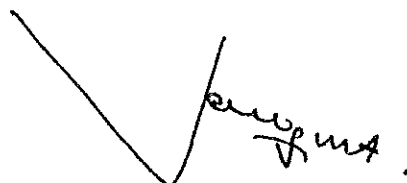
As a result of the study, JICA prepared a draft report and dispatched a mission to explain and discuss it from 25th March to 3rd April, 1987.

Both parties had a series of discussions on the Report and agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Jakarta, 1st April, 1987



Mr. Kanji Tamagawa
Team Leader
Basic Design Study Team
Japan International
Cooperation Agency



Dr. Ir. Sadji Partoatmodjo
for Director General of Food
Crops Agriculture,
Ministry of Agriculture

ATTACHMENT

1. The Indonesian side had agreed in principal to the basic design proposed in the Draft Final Report and appropriate alteration agreed by both parties during the discussions will be incorporated in the Final Report.
2. The Indonesian side had understood Japan's grant aid system and both parties had confirmed that the Government of the Republic of Indonesia will take necessary measures as ANNEX I upon the execution of the grant aid to the Project by the Government of Japan.
3. Both parties had confirmed that the Final Report (10 - copies in English) will be submitted to the Government of the Republic of Indonesia in June, 1987.

K.T.

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ANNEX I

Necessary measures to be undertaken by the Government of the Republic of Indonesia

1. Work Related to Construction
 - a. Improvement of the sites for construction of facilities
 - b. Provision of electric power, telephone circuits, water service piping, drainage canal and other ancillary facilities necessary for the facilities within respective sites
 - c. Supply of temporary electric power for construction except six locations, (Waleurang, LUWU; Keumala, PIDIE; Peureulak, ACEH TIMUR; Alung Selatan, LAMPUNG UTARA; Gadingrejo, LAMPUNG SELATAN; Belitang, OKU)
 - d. Outdoor facilities (entrance gates, fencing, planting)
 - e. Construction and/or improvement of the access road and bridge to the proposed construction site
2. Provision of Conveniences Related to Construction
 - a. Tax exemptions and Provision of conveniences in making entry and exit to and from the country and during sojourn for organizations and individual persons of Japanese nationality who shall engage in the project
 - b. Tax exemptions and provision of conveniences in customs clearance formalities for construction equipment and materials, laboratory equipment and others, which shall be brought into Indonesia for the implementation of the project
 - c. Acquisition of the building permit prior to commencement of construction
 - d. Securing of sites for temporary office, working area, equipment and construction materials yard, etc. necessary for the construction work
3. Proper maintenance and management of facilities and equipment which shall be constructed and/or provided under the grant aid.
4. Personnel assignment according to the proposed staff plan for proper and effective implementation of the Project.
5. Budget for other necessary expenses inclusive of Value Added Tax in accordance with the implementation schedule for the Project.

K.T.

APPENDIX III

LIST OF PARTICIPANTS

MEMBERS OF THE BASIC DESIGN STUDY TEAM

1. Kanji Tamagawa
Team Leader
Deputy Director
Plant Protection Division
Ministry of Agriculture,
Forestry and Fisheries
2. Yoshihide Teranishi
Project Coordinator
First Basic Design Study Division
Grant Aid Planning and Survey Department
Japan International Cooperation Agency
3. Hiroshi Kikuoka
Architectural
Planning and
Coordination
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.
4. Arata Miyahara
Architectural Design
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.
5. Yasuaki Ohno
Structural Planning
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.
6. Yoshimitsu Okunaga
Food Crop Protection
Equipment
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.
7. Kouichirou Tsutsumi
Structural
Engineering
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.

APPENDIX IV

LIST OF PARTICIPANTS

MEMBERS OF THE DRAFT REPORT STUDY TEAM

1. Kanji Tamagawa
Team Leader
Deputy Director
Plant Protection Division
Ministry of Agriculture,
Forestry and Fisheries
2. Hiroshi Kikuoka
Architecture
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.
3. Yoshimitsu Okunaga
Food Crop Protection
Equipment
Matsuda, Hirata & Sakamoto
Architects, Planners & Engineers, Inc.

APPENDIX V

SCHEDULE OF BASIC DESIGN STUDY TEAM IN INDONESIA

Abbreviation

K. Tamagawa : K.T
Team Leader
Y. Teranishi : Y.T
Project Coordinator
H. Kikuoka : PM
A. Miyahara : A
Y. Ohno : SP
Y. Okunaga : CP
K. Tsutsumi : SE

December 1986

- (1) 21st Arrival in Jakarta
(Y. Teranishi Project Coordinator, PM, A, SP, CP, SE)
- Team Meeting
- (2) 22nd Embassy of Japan, JICA Jakarta office
- Courtesy call and discussions regarding study schedule

DFCP
- Meeting with L/E Dr. NASU and Mr. Kagai adviser
- (3) 23rd DFCP
- Submission and explanation of Inception Report
- Discussion of schedule of Field Survey

DGFCFA
- Courtesy call

- Team Meeting
- (4) 24th SEKNEG (Y. Teranishi, PM, A)
- Courtesy call and explanation of the Project

DFCP
- Discussion of schedule of Field Survey

BAPPENAS (Y. Teranishi, PM)
- Courtesy call and explanation of the Project

- Team Meeting

JICA Jakarta office
- Discussion of Field Survey schedule

- (5) 25th Departure for Tokyo (Y. Teranishi)
- Team Meeting
- (6) 26th DFCP
- Discussion of Field Survey schedule
- Team Meeting
- (7) 27th DFCP (A, SP, SE)
- Discussion of Field Survey
DFCP (PM, CP)
- Meeting with Mr. Kagai adviser
- Preparation for Field Survey
- (8) 28th PM, A, SP JAKARTA - UJUNGPANDANG
CP, SA
- (9) 29th PM, A, SP UJUNGPANDANG - MAROS
CP, SA
- Survey of MAROS FCPC site
PM, A MAROS - PALOPO
- Survey of LUWU FL site
SP, SE MAROS - BONE- BULUKEMBA - UJUNGPANDANG
- Survey of BONE FL site
- Survey of BULUKEMBA FL site
CP MAROS - UJUNGPANDANG
- Collection of data at MAROS FCPC
- (10) 30th PM, A PALOPO - UJUNGPANDANG
SP, SE, CP UJUNGPANDANG - MAROS - UJUNGPANDANG
- Survey of MAROS FCPC
PM, A, CP UJUNGPANDANG - JAKARTA
SP, SE
- Team Meeting
- (11) 31th PM, A, CP JAKARTA - MEDAN
- Survey of MEDAN FCPC site

JANUARY 1987

- (12) 1st PM, A, CP MEDAN
 SP, SE - Survey of MEDAN City area
- (13) 2nd PM, A, CP MEDAN - AIR PUTIH - MEDAN
 - Survey of ASAHAN FL site
 - Survey of DELI SELDANG FL site
- SP, SE MEDAN - SIDINPAN
 - Survey of TAPANULI UTARA FL site
- (14) 3rd CP MEDAN - PARAPAT
 - Collection of data at MEDAN FCPC
- PM, A MEDAN - PARAPAT
 - Survey of SIMALUNGUN FL site
- SP, SE SIDINPAN - PARAPAT
 - Survey of TAPANULI SELATAN FL site
- (15) 4th PM, A, CP PARAPAT
 SP, SE - Analysis of data
 - Team Meeting
- (16) 5th PM, A, CP PARAPAT - MEDAN
 SP, SE
- PM, A, CP MEDAN - BANDA ACEH
 - Survey of D. I. ACEH SUB-FCPC site
- SP, SE MEDAN - PALEMBANG
- (17) 6th PM, A BANDA ACEH - MEULABOH
- SP, SE PALEMBANG - AMPERA
 - Survey of PALEMBAN FCPC site
 - Survey of MUSI BANYU ASIN FL site
- CP BANDA ACEH
 - Collection of data
- (18) 7th PM, A MEULABOH - BANDA ACEH
 - Survey of ACEH BARAT FL site
- SP, SE AMPERA - LAHAT
 - Survey of OKU FL site
- CP BANDA ACEH - MEDAN
 - Collection of Data

(19)	8th	PM, A	BANDA ACEH -- LANGSA - Survey of PIDIE FL site
		SP, SE	LAHAT -- PALEMBANG - Survey of LAHAT FL site
		CP	MEDAN - Collection of data - Analysis of data
(20)	9th	PM, A	LANGSA -- MEDAN - Survey of ACEH TIMUR FL site
		SP, SE	PALEMBANG - Collection of Data at PALEMBANG FCPC
		CP	MEDAN -- PALEMBANG - Collection of Data at MEDAN FCPC
(21)	10th	PM, A	MEDAN -- KUTACANE -- MEDAN - Survey of ACEH TENGGARA FL site
		CP	PALEMBANG - Collection of Data at PALEMBANG FCPC
		SP, SE	PALEMBANG -- JAKARTA
(22)	11th	PM, A	MEDAN -- JAKARTA
		CP	PALEMBANG -- JAKARTA
		SP, SE	JAKARTA - Analysis of Data
(23)	12th	PM	JAKARTA - Discussion with DFPC
		A, CP SP, SE	- Analysis of results of site survey
(24)	13th	PM	JAKARTA - Preparation of intermediate Report for condition of sites survey
		A, CP	JAKARTA -- BANDA LAMPUNG - Survey of LAMPUNG UTARA FL site
		SP, SE	JAKARTA -- BANJARMASIN

- (25) 14th PM JAKARTA
 - Collection of Data at DFCP
- A, CP BANDA LAMPUNG
 - Survey of LAMPUNG SELATAN FL site
- SP, SE BANJARMASIN
 - Survey of BANJAR BARU FCPC site
 - Survey of BANJAR FL site
- (26) 15th PM JAKARTA
 - Collection of Data at DFCP
 - Analysis of data
- A BANDA LAMPUNG - JAKARTA
- CP BANJARMASIN
- SP, SE BANJARMASIN
 - Survey of HULU SUNGAI SELATAN FL site
 - Survey of HULU SUNGAI UTALA FL site
- (27) 16th PM JAKARTA
 - Discussion with DFCP
 (Personnel Management and Counter Budget
 etc.)
- SP, SE, CP BANJARMASIN
 - Survey of HULU SUNGAI TABU FL site
 - Team Meeting
- (28) 17th PM JAKARTA
 - Discussion with DFCP
 (Organization, Function and Activities and
 Equipment Details)
- SP, SE, CP BANJARMASIN - JAKARTA
- Arrival in JAKARTA JAL721
 (K. Tamagawa, Team Leader and Y. Teranishi,
 Project Coordinator)
- Team Meeting
- (29) 18th - Analysis of Data
 - Team Meeting
 - Study of construction conditions
- (30) 19th DFCP
 - Meeting with Dr. Nasu
 - Collection and Analysis of data

- (31) 20th DFCP
 - Discussions regarding the Project
 (Construction Sites, Counter Budget,
 Personnel Management Plan and function of PL)
- (32) 21st K.I, Y.T, PM - Visit to Embassy of Japan and JICA Jakarta
 office
 - Visit to DGFC
 (Courtesy call and Discussion regarding the
 Project)
 - Preparation of Minutes of Discussions
 A, SP, SE, CP - Study of building locations and floor plans
- (33) 22nd K.T, Y.T, PM BAPPENAS
 - Discussion of preparation of counter budget
 DFCP
 - Discussion of draft Minutes of Discussions
 A, SP, SE, CP - Discussion of building locations and floor
 plans with DFCP
- (34) 23rd DFCP
 - Signing and exchange of Minutes of
 Discussions
 K.T, Y.T, PM JAKARTA - PALEMBANG
 - Survey of PALEMBANG FCPC site
 CP, SP, SE DECP
 - Collection and Discussion of Data
- (35) 24th K.T, Y.T, PALEMBANG
 PM, A - Survey of OKU FL site
 CP, SP, SE DFCP
 - Analysis of Data
- (36) 25th K.T, Y.T PALEMBANG - JAKARTA - JATISARI
 PM, A - Visit of PFC construction site
 CP, SP, SE JAKARTA
 - Analysis of Data
 - Collection of material on construction
 conditions
- (37) 26th - Visit and report to Embassy of Japan and JICA
 Jakarta office
 Departure for Tokyo GA872
 (K.T, Y.T, PM, A, SP, CP, SE)
- (38) 27th Arrival in Tokyo

APPENDIX VI

SCHEDULE FOR DRAFT REPORT OF THE BASIC DESIGN STUDY TEAM IN INDONESIA

MARCH 1987

- (1) 25th Arrival in Jakarta
 (Kikuoka, Okunaga)

- (2) 26th JICA Jakarta office and Embassy of Japan
 - Courtesy call and submission of Draft Report

 DFCP
 - Coutesy call and submission of Draft Report

- (3) 27th - Team Meeting

- (4) 28th DGFC
 - Discussion of Counter Budget

 DFCP
 - Explanation and discussion of Draft Report of Basic
 Design Report

 Arrival in Jakarta
 (K. Tamagawa Team Leader)

 - Team Meeting

- (5) 29th - Team Meeting

 - Prepalation of PL equipment list

- (6) 30th JICA Jakarta office and Embassy of Japan
 - Courtesy call

 DFCP
 - Meeting with Dr. Nasu Leader

 - Discussion of PL equipment details

 - Drafting of Minutes of Discussions

- (7) 31st Visit to PFC (Jatisari) construction site

APRIL 1987

- (8) 1st DFCP
- Signing and Exchange of Minutes of Discussions
- Report to JICA Jakarta office
- (9) 2nd - Analysis of Data
Departure for Tokyo GA872
- (10) 3rd Arrival in Tokyo

APPENDIX VII

LIST OF INDONESIAN SIDE PARTICIPANT AND INTERVIEWERS FOR BASIC DESIGN STUDY

A. DGFCFA, DFCEP

1. Ir. Suhaedi Wiraatmadja	Director General	Directorate General of Food Crops Agriculture (DGFCFA)
2. Ir. Syamsuddin Abbas	Secretary	DGFCFA
3. Dr. Ir. Sadji Partoatmodjo	Director	Directorate of Food Crops Protection (DGFCFA)
4. Ir. Soelbijati Soebrote	Director	Directorate of Programme Development
5. Ir. Haryono Siswomihardjo	Head	DFCEP (Pesticide Division)
6. Ir. Suroto	Head	DFCEP (Pest Observation and Forecasting)
7. Ir. Ati Wasiati	Head	DFCEP (Disease and Weed Control Division)
8. Ir. Daryanto	Head	DFCEP (Pesticide Division)
9. Ir. Malyan Sukardi	Secretary	DFCEP (Pesticide Commission)
10. Ir. Joeli Hartono	Staff	DFCEP (Disease and Weed Control Division)
11. Ir. Bambang Suhario	Staff	DFCEP (Disease and Weed Control Division)
12. Ir. Herdradjat Natawidjaja	Staff	DFCEP (Disease and Weed Control Division)
13. Mrs. Utari Damiati	Staff	DFCEP (Pesticide Division)
14. Ir. Achamad	Head	MAROS FCPC

15.	Ir. Mad Rais Zauhari	Head	MEDAN FCPC
16.	Ir. Sutarto Alimoeso	Head	BANJARBARU FCPC
17.	Ir. Diran	Head	PALEMBANG FCPC
B. BAPPENAS			
1.	Dr. Ir. Alirahman	Head	Bureau of Agriculture and Irrigation, National Development Planning Agency
2.	Mr. Rusnadi Msc	Staff	Bureau of Agriculture and Irrigation, National Development Planning Agency
3.	Mr. Amore Rio Sasongko	Staff	Bureau of Agriculture and Irrigation, National Development Planning Agency
C. SEKNEG			
1.	Mr. Roharisani	Head	Sekretaris Negara

APPENDIX VIII

LIST OF INDONESIAN SIDE PARTICIPANT AND INTERVIEWERS FOR DRAFT REPORT OF THE BASIC DESIGN STUDY

1.	Dr. Ir. Sadji Partoatmodjo	Director	Directorate of Food Crops Protection (DFCP)
2.	Ir. Soelbijati Soebroto	Director	DGFCA Directorate of Programme Development
3.	Ir. KasmO	Head	DFCP Sub-Directorate of Vertebrate and Storage Pest
4.	Ir. Daryanto	Head	DFCP Sub-Directorate of Pesticides
5.	Ir. Suroto	Head	DFCP Observation and Forecasting Division
6.	Ir. Ati Wasiati	Head	DFCP Disease and Weed Control Division

SUPPLEMENT

TABLE 1 Area Harvested, Production and Yield Rate of Food Crops

c r o p s	1981	1982	1983	1984
p a d d y				
Area harvested(ha)	9,381,839	8,988,455	9,162,500	9,763,600
Production (ton)	32,774,176	33,583,677	35,303,100	38,136,400
Yield rate (t/ha)	3.493	3.736	3.853	3,906
M a i z e				
Area harvested(ha)	2,955,039	2,061,299	3,002,200	3,025,400
Production(ton)	4,509,302	3,234,825	5,086,900	5,359,200
Yield rate (t/ha)	1.526	1.569	1.694	1.771
C a s s a v a				
Area harvested(ha)	1,387,536	1,323,709	1,220,800	1,338,900
Production(ton)	13,300,911	12,987,891	12,102,700	14,205,300
Yield rate (t/ha)	0.96	0.98	0.99	1.06
Sweet potatoes				
Area harvested(ha)	274,905	219,655	280,200	279,000
Production(ton)	2,093,572	1,675,657	2,213,000	2,304,800
Yield rate (t/ha)	0.76	0.76	0.79	0.83
Peanuts				
Area harvested(ha)	507,954	461,338	480,500	523,300
Production(ton)	474,591	436,822	460,400	522,400
Yield rate (t/ha)	0.0934	0.0947	0.0958	0.0998
Soyabeans				
Area harvested(ha)	809,978	607,788	639,900	837,800
Production(ton)	703,811	521,394	536,100	742,600
Yield rate (t/ha)	0.08690	0.0858	0.0838	0.0886

SOURCE : Statistik Indonesia (1985)

TABLE 2 Area Harvested of Paddy by Province (ha)

Province	1981	1982	1983	1984
D. I. Aceh	257,393	255,645	270,232	270,134
Sumatera Utara	550,793	566,136	551,784	583,064
Sumatera Barat	280,547	299,902	324,879	336,817
Riau	132,914	128,195	135,350	141,848
Jambi	142,725	154,107	163,289	165,614
Sumatera selatan	365,410	361,827	420,259	391,643
Bengkulu	68,785	76,426	85,127	84,221
Lampung	290,414	299,763	324,622	361,370
SUMATERA	2,095,981	2,142,001	2,275,542	2,334,681
D. K. I. Jakarta	16,558	14,106	9,601	9,738
Jawa Barat	1,944,531	1,797,745	1,832,110	2,012,602
Jawa tengah	1,415,449	1,321,263	1,316,356	1,473,123
D. I. Yogyakarta	151,934	142,044	136,848	151,794
Jawa timur	1,517,503	1,473,915	1,484,240	1,564,342
JAWA	5,045,975	4,749,073	4,779,155	5,211,599
Bali	172,524	169,761	168,459	168,521
Nusa tenggara barat	239,945	245,101	231,765	251,136
Nusa tenggara timur	138,402	132,560	133,287	116,171
BALI, NUSA	550,871	547,422	533,511	535,828
Kalimantan barat	310,785	299,783	280,275	275,483
Kalimantan tengah	120,610	117,094	117,192	116,403
Kalimantan selatan	320,603	303,133	307,369	328,556
Kalimantan timur	97,301	91,944	45,029	74,270
KALIMANTAN	849,299	811,954	749,865	794,712
Sulawesi utara	64,202	76,799	73,778	70,595
Sulawesi tengah	111,978	98,986	111,010	104,380
Sulawesi selatan	598,364	509,283	580,453	647,757
Sulawesi tenggara	36,941	36,741	42,150	45,538
SULAWESI	811,485	721,809	807,391	868,270
Maluku	26,125	14,084	14,843	16,276
Irian Jaya	2,063	2,112	2,162	2,214
Maluku&Irianjaya	28,228	16,196	17,005	18,490
OUTER JAWA	4,335,864	4,239,382	4,383,314	4,551,981

SOURCE : Statistik Indonesia (1985)

TABLE 3 Production of Paddy by Province (ton)

Province	1981	1982	1983	1984
D. I. Aceh	834,888	867,466	945,587	915,133
Sumatera Utara	1,662,674	1,834,709	1,832,533	2,022,000
Sumatera Barat	1,029,912	1,131,448	1,292,885	1,353,778
Riau	264,696	297,469	321,488	328,796
Jambi	396,246	426,687	445,783	454,915
Sumatera selatan	944,085	968,296	1,131,241	1,092,951
Bengkulu	168,601	214,519	250,553	247,038
Lampung	783,933	875,055	960,665	1,081,432
SUMATERA	6,085,035	6,615,649	7,180,734	7,496,043
D. K. I. Jakarta	52,064	49,235	32,991	34,724
Jawa Barat	7,287,196	7,431,497	7,770,246	8,527,634
Jawa tengah	5,761,440	5,774,064	6,101,259	6,903,615
D. I. Yogyakarta	550,279	548,984	577,209	640,746
Jawa timur	6,878,791	7,051,258	7,146,592	7,593,607
JAWA	20,530,310	20,858,038	21,628,297	23,700,326
Bali	746,334	734,755	738,906	758,831
Nusa tenggara barat	829,762	884,273	872,246	952,090
Nusa tenggara timur	247,223	275,775	301,940	257,780
BALI, NUSA	1,823,329	1,894,803	1,913,092	1,968,701
Kalimantan barat	611,837	632,818	627,662	587,008
Kalimantan tengah	219,632	222,523	215,923	209,587
Kalimantan selatan	786,184	738,973	757,799	842,000
Kalimantan timur	179,563	185,005	95,069	141,320
KALIMANTAN	1,797,216	1,779,319	1,696,453	1,779,915
Sulawesi utara	189,062	257,258	267,733	262,638
Sulawesi tengah	234,439	237,592	277,959	259,553
Sulawesi selatan	2,018,593	1,854,466	2,219,471	2,539,407
Sulawesi tenggara	64,779	71,437	95,793	105,450
SULAWESI	2,506,893	2,420,753	2,860,956	3,167,048
Maluku	27,688	13,881	18,984	19,823
Irian Jaya	3,705	4,234	4,590	4,590
Maluku&Irianjaya	31,393	18,115	23,574	24,413
OUTER JAWA	12,243,866	12,728,639	13,674,809	14,436,120

SOURCE : Statistik Indonesia (1985)

TABLE 4 Area Rate of Paddy by Province (kg/ha)

Province	1981	1982	1983	1984
D. I. Aceh	3,244	3,393	3,499	3,388
Sumatera Utara	3,019	3,241	3,321	3,468
Sumatera Barat	3,671	3,773	3,980	4,019
Riau	1,991	2,320	2,375	2,318
Jambi	2,646	2,769	2,730	2,747
Sumatera selatan	2,584	2,676	2,692	2,791
Bengkulu	2,451	2,807	2,943	2,933
Lampung	2,699	2,919	2,959	2,993
SUMATERA	2,903	3,089	3,156	3,211
D. K. I. Jakarta	3,177	3,490	3,436	3,566
Jawa Barat	3,748	4,134	4,242	4,237
Jawa tengah	4,070	4,370	4,635	4,686
D. I. Yogyakarta	3,622	3,865	4,218	4,221
Jawa timur	4,533	4,784	4,815	4,854
JAWA	4,069	4,391	4,526	4,548
Bali	4,326	4,328	4,386	4,503
Nusa tenggara barat	3,458	3,608	3,763	3,791
Nusa tenggara timur	1,786	2,080	2,265	2,219
BALI, NUSA	3,310	3,461	3,586	3,674
Kalimantan barat	1,969	2,111	2,237	2,131
Kalimantan tengah	1,821	1,900	1,842	1,801
Kalimantan selatan	2,452	2,436	2,465	2,563
Kalimantan timur	1,845	2,012	2,111	2,003
KALIMANTAN	2,116	2,191	2,262	2,240
Sulawesi utara	2,945	3,350	3,629	3,720
Sulawesi tengah	2,094	2,400	2,504	2,487
Sulawesi selatan	3,374	3,641	3,824	3,920
Sulawesi tenggara	1,754	1,944	2,273	2,316
SULAWESI	3,089	3,354	3,543	3,648
Maluku	1,058	986	1,279	1,218
Irian Jaya	1,796	2,005	2,123	2,073
Maluku&Irianjaya	1,112	1,118	1,386	1,320
OUTER JAWA	2,824	3,002	3,120	3,171

SOURCE : Statistik Indonesia (1985)

TABLE 5 Rice Damage Area by Pest and Disease (1980 - 1985)

(unit: 1,000ha)

major pest and disease	1980	1981	1982	1983	1984	1985	average
BPH	79	58	62	116	30	61	68
Gall Nidge	37	25	24	17	17	11	22
Stemborer	227	276	150	126	(ND)	86	173
Rat	6	6	6	6	31	22	13
Tungro	230	199	194	168	242	237	212

source: Directorate of food crop protection (1985)

TABLE 6 Damage Area by Major Pest and Disease in 6 Provinces (1985)

(unit: ha)

year major pest and disease	South sulawesi	North sumatera	D. I. Aceh	South sumatera	Lampung	South Kalimantan	all Indonesia
Rat	6.112	44.413	1.124	7.743	5.835	2.894	237.772
B P H	319	9.151	20.135	3.594	1.654	52	61.573
Stemborer	3.635	3.115	8.467	1.441	1.146	823	86.233
Gall Midge	175	186	5.452	15	797	54	11.507
Tungro	2.769	—	—	1.207	—	112	22.000

source: Directorate of food crop protection (1985)

TABLE 7 Basic Concept of Facility Functions

Strengthening of Technology	System	Items to be Identified	Items to be strengthened in F/L, O/U	Functional Role of PFC-DFCP, FCPC
<p>(1) Pest Surveillance and Monitoring Technology</p>	<p>Surveillance System</p> <p>O/U → F/L → FCPC</p> <p>Weekly Report</p> <p>Instructed by DFCP-PFC</p> <p>Basic technology studied by PFC</p>	<p>Designated Pest</p> <p>Nation/Provincen/FL area/District</p> <p>Yield Loss Ratio</p> <p>FCPC review</p> <p>(Provincial Ag. Ex. Service)</p> <p>Pest forecasting and control techniques</p>	<p>Restricted Surveillance O/U</p> <p>(Rice variety, Cropping technology)</p> <p>O/U → F/L</p> <p>Monitoring</p> <p>Practical Experiment</p> <p>F/L</p> <p>Practical data on yield loss Experiments on chemical dosage and integrated pest control</p>	<p>Establishment of Special Surveillance Tech.</p> <p>For designated pest DFCP/PFC FCPC</p> <p>Establishment of Standards for Estimation of yield loss ratio</p> <p>DFCP/PFC FCPC</p> <p>Training & Instruction</p> <p>PFC → FCPC, F/L</p>
<p>(2) Pest Forecasting and Control Technology</p>	<p>PFC: Technical Training</p> <p>FCPC: Application of PFC techniques at the provincial level</p> <p>Instruction of F/L</p> <p>Designation of</p> <p>Restricted F/L area and/or districts</p> <p>F/L: Technological Development Tests</p> <p>Demonstrative field experiments</p>	<p>Forecasting Unit</p> <p>District level</p> <p>(To be started from districts with F/L)</p> <p>F/L: Regional Map.</p> <p>Pest prevalence map</p> <p>Rice varieties</p> <p>Cropping calendar</p> <p>other technical items</p> <p>Forecasting of designated pest by restricted rice variety and month of harvest</p> <p>Forecasting Conditions Related to rainfall</p>	<p>F/L: Cooperation with District Agricultural Office</p> <p>Monitoring from PPL (Agr. Extension Worker)</p> <p>O/U District Coordinator</p> <p>Data from District Agr. office</p> <p>Date from Meteorological station</p>	<p>FCPC: Cooperation with Provincial Agricultural Service</p> <p>Preparation of Pesticide and Equipment for pest control.</p> <p>Estimation of Yield Loss</p> <p>Yield Loss Monitoring (O/U, F/L)</p> <p>PFC: Establishment of basic theory and techniques in Forecasting Technology</p> <p>FCPC: Planning of F/L experiments and collection of Data. Confirming experiments in CPC</p>

TABLE 8 Proposed Functions and Activities of Each Facilities

Function & Activity Organization	Integrated Administrative Network					
	Technical Function	Pest Forecasting and Control Technology	Transportation and Communication	Monitoring and Patrol Systems		
DFCP-PFC	<p>Pest Surveillance and Monitoring Technology</p> <ol style="list-style-type: none"> 1. Programming the personal computer for data input and ordering FPC to input the data. 2. Analyzing data with the office computer (NEC100) 3. Improving technology with ATA-102, etc. 4. Identifying designated pests at the national and provincial levels. 	<ol style="list-style-type: none"> 1. Pest forecasting by the office computer at the national level. 2. Development of technology at the national level through the provincial level. 3. Arrange executive programs in each FPC & F/L. 	<ol style="list-style-type: none"> 1. Data weekly submission of FPC to DFCP/PFC. 2. Data arrangement by province, F/L area and District with personal computer. 3. Patrol for pest outbreak (urgently required). <p>Installation of dial telephonic, facsimile and mobile laboratory for the above.</p>	<ol style="list-style-type: none"> 1. Obtaining computerized data from FPC. 2. Requesting original data if necessary. 3. Patrol of FPC by F/L in order to instruct and check FPC management of F/L once a year or more. 	<p>Education and Training System</p> <ol style="list-style-type: none"> 1. Training of technical staff for F/L and FPC. (Six months course for 20 persons with 6 instructors) 2. Training in computer technology for FPC staff. 3. Holding FPC meetings twice a year. 	<p>Cooperation with Other Agencies</p> <p>Ministry of Agriculture</p> <ol style="list-style-type: none"> 1. National Pesticide Commission. 2. National Plant Protection Committee 3. Pest Bridge (by plane). 4. Agency for Agricultural Education, Training and Extension 5. Agency for Agricultural Research and Development. 6. Press, Radio & TV station (mass communication)
FPC	<ol style="list-style-type: none"> 1. Input of OU data into the personal computer and report to DFCP-PFC, F/L and other related agencies. 2. Instruction and supervise experiments at F/Ls. 3. Planning a field study in cooperation with F/L. 4. Identifying designated pest at the provincial & District levels. 	<ol style="list-style-type: none"> 1. Pest forecasting by personal computer in provincial level. 2. Development of technology at the provincial level on the basis of F/L experiments and report. 3. Coordination and supervision F/L executive programs. 	<ol style="list-style-type: none"> 1. Immediate notification of pest outbreak in F/L area to FPC. 	<ol style="list-style-type: none"> 1. Review of F/L data and original O/U data. 2. Discussion of data analysis with F/L. 3. Patrol of F/L by FPC in order to instruct and to check F/L management of O/U twice a year or more. 	<ol style="list-style-type: none"> 1. Holding weekly meetings. 2. Holding extra F/L meetings if necessary. 3. Holding O/U coordinator (District Representatives) meeting once a month. 	<ol style="list-style-type: none"> 1. Maintenance of Brigade equipment. 2. Arrangement of necessary. 3. Advising other agencies - BLPP (Agricultural training center) 4. SIP (Agricultural Information center) 5. BES (Central Bureau of statistics) 6. DPP (Provincial office of Agricultural Extension) 7. Cooperation with Univ.
F/L	<ol style="list-style-type: none"> 1. Enumeration and analysis of O/U data. 2. Formulation of a regional map on pest prevalence, rice varieties, cropping calendar, etc. 3. Preparation of pest samples. 4. Testing of pest rearing. 	<ol style="list-style-type: none"> 1. Mapping of designated pests in each district. 2. Field experiments on forecasting and control at the order of FPC. 3. Specific study on vertebrate or natural enemies in A-type F/L. 	<p>Wireless communication (SSB)</p>	<ol style="list-style-type: none"> 1. Weekly submission of data report to F/L and FPC by O/U. 2. Monitoring of farm operation in observation field. 3. Patrol of O/U by F/L in order to instruct and to check O/U activities more than twice a crop season. 	<ol style="list-style-type: none"> 1. Holding O/U meeting every Saturday for technical instruction. 2. Instruction in specific technology for A type F/L. 3. Holding O/U coordinator meeting every two weeks. 	<ol style="list-style-type: none"> 1. Support of Pest Brigade. 2. Advising of the District office of Agricultural Extension. 3. Exchange of pest information with RDP every District. 4. Cooperation with Universities. 5. Study of seed production farm.
O/U	<ol style="list-style-type: none"> 1. Weekly reporting of data at the order of the F/L. 2. Obtaining farm data such as variety, other crops, fertilizer, agro-chemical, etc. from PPM. 3. Reporting of farm data to the F/L. 	<ol style="list-style-type: none"> 1. Where the signs of pest outbreak are evident, sending samples to the F/L immediately. 	<ol style="list-style-type: none"> 1. Pest surveillance in allocated area. 2. Weekly F/L meetings. 3. Support service and pest control in allocated area. (Motorcycles required for communication between F/L and O/U.) 	<ol style="list-style-type: none"> 1. 30 days training in BLPP. 2. 90 days special course at BLPP. 3. Provide opportunities for attending University diploma course. 	<ol style="list-style-type: none"> 1. Cooperation and advising BPP and Agricultural Officer in Kecamatan on pest forecasting and control. 2. Exchange of information with PPM (Extension Officer) and PPL (Extension Worker) 	

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