

CHAPTER VIII SOCIO ECONOMIC IMPACTS

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The project will give the following socio-economic impacts to Indonesia.

(1). The project will bear the Indonesian Food Policy for self-sufficiency, and contribute significantly to release from their food shortage and to the stabilization of national life through the sufficient food supply.

(2). The project will also conserve scarce foreign exchange by the limiting import of rice.

(3). The project will support government price policy for food, and contribute to the stabilization of consumer's price and producer's price of rice in Indonesia.

(4). The project would stimulate paddy producers in outer possession of Indonesia to have more planted areas and to increase paddy production due to farmer's confidence in improved dominant seeds projected by the government, and it would finally promote rural socio-economic development in objective provinces.

(5). The project ensures the permanent employment for additional agricultural technician, besides the construction or rehabilitation works of C.S.F, M.S.F and S.P.C would create additional job opportunities for unemployed labors.

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Table 1 - 1 Seed Terminology

Definition and Use	O E C D 1)	Seed I and II Project 2)	This feasibility Study
First generation supplied by plant breeder for multiplication	Pre-basic Seed	Breeder Seed	Breeder Seed
Second generation multiplied under the plant breeder's care or by a special agency	Basic Seed	Foundation Seed	Foundation Seed
Third generation supplied to seed growers, seed farms, or seed enterprises for multiplication and sale commercially or further multiplication	Certified Seed first Generation	Stock Seed	Stock Seed
Fourth generation multiplied by seed growers, seed farms, or seed enterprises for sale commercially	Certified Seed second Generation	Extension Seed	Extension Seed
Same as and lower quality standards	Normally not used as seed	Good Seed	Not used

1) Organization for Economic Cooperation & Development

2) World Bank and FAO carried out in Indonesia.

Reference 1-1 SCOPE OF WORKS FOR THE FEASIBILITY STUDY ON THE RICE
SEED PRODUCTION AND DISTRIBUTION PROJECT.

(I) Introduction

In response to the request of the Government of the Republic of Indonesia.

The Government of Japan dispatched a survey team to Indonesia in October 1981 to carry out a preliminary survey for the Feasibility Study on the Rice Seed Production and Distribution Project (hereinafter referred to as "the Study"), in close cooperation with the Indonesian Authorities concerned.

As a result of the preliminary survey, the Government of Japan decided to conduct the Study in Lampung, South Sumatra and Aceh Provinces of Indonesia (hereinafter referred to as "the Objective Provinces") based on the "Record of Discussions between the Japanese Group and the Indonesian Group on Cooperation for Increasing Rice Production in Indonesia" agreed on July 1st, 1981, as a part of the technical cooperation program of the Government of Japan.

Accordingly, Japan International Cooperation Agency (JICA), the Governmental agency responsible for the execution of the technical cooperation program will be the executing agency for the Study.

The Scope of works is prepared on the basis of the results of the preliminary survey, describing the items to be studied by the Japanese survey team tentative work schedule, reports to be submitted to the Government, and service and facilities to be provided by the Government for the smooth execution of the Study.

(II) Objectives of the Study.

The objectives of the Study are:

- (1) to make a plan on production and distribution of rice seeds of recommended varieties in the Objective Provinces and, to verify

the feasibility of the Rice Seed Production and Distribution Project from technical and economic point of view.

(2) to undertake on-the-job training to transfer the technology to the counterpart personnel in the course of the Study.

(III) Outline of the Study.

The Study to be undertaken will comprise the following:

1. To collect the relevant data and information and to carry out the field survey in the Objective Provinces and Jakarta on the following items:

(1) Paddy Cultivation in the Objective Provinces.

a. Present situation

- (i) Harvested area
- (ii) Yield and production
- (iii) Type of rice
- (iv) Varieties
- (v) Cropping season

b. Future prospects

(i) Intensification programs

- a) BIMAS
- b) INMAS

(ii) Development programs

- a) Irrigation
- b) Transmigration
- c) Rice field formation
- d) Resettlement
- e) Others, if necessary

(2) Present Situation of Rice Seed Production and Distribution

(3) Central and Main Seed Farms

a. Location and environment

(i) Natural conditions

- a) Climate
- b) Topography
- c) Soil
- d) Others

(ii) Social and economic conditions

- a) Transportation
- b) Electricity
- c) Distribution of seed growers
- d) Others

b. Present condition of seed farms

(i) Buildings and facilities

(ii) Machineries

(iii) Fields

(iv) Water supply

(v) Staff

c. Governmental/provincial programs to upgrade the seed farms.

(4) Seed Processing Centers

a. Location and environment

(i) Natural conditions

(ii) Social and economic conditions

b. Present situation of seed growers and training program for seed growers.

c. Collection, storage and distribution plan of rice seeds prepared by the Government

(5) Central Seed Storage Center

a. Location and environment

- (1) Natural and social conditions
 - b. The demand for breeder seed by province
- (6) Seed Control and Certification Service
 - a. Facilities and equipment
 - b. Staff
 - c. Government program to strengthen the service.
- (7) Training Program for the Staff of Seed Farms and Seed Growers.
- (8) Sampling-Survey on the Farmers' Response to Using the High-Quality Seeds.
- (9) Unit Cost of Materials, Machineries and Labour.
- (10) Other necessary items.

2. Based on the results of the field survey, the following plans will be prepared:

- (1) To estimate the demand for Foundation Seeds, Stock Seeds and Extension Seeds in the objective Provinces, and to determine the location and the scale of the seed farms and the seed processing centers.
- (2) To make the improvement and management plan for the central and main seed farms.
- (3) To make the establishment and management plan for the seed processing centers.
- (4) To make the establishment and maintenance plan for the central and the regional seed storage centers.
- (5) To make inventory on machineries and equipment to upgrade the seed control and certification service.
- (6) To make the training program for the staff of the seed farms and the seed growers.

(7) To make the implementation schedule of the Rice Seed Production and Distribution Project.

(8) To make economic and financial evaluation on the plans prepared above.

(IV) Work Schedule.

The work schedule is shown in the attached sheet

To carry out the Study, JICA will dispatch the required experts of the survey team in accordance with the work schedule attached.

(V) Reports.

The following reports will be prepared and submitted to the Government:

(1) Plan of operation.

Twenty (20) copies in English at the commencement of the field survey in Indonesia.

(2) Progress Report

Twenty (20) copies in English at the end of the field survey.

(3) Draft Final Report

Twenty (20) copies in English within one (1) month after the end of the office work in Japan.

(4) Final Report

Fifty (50) copies in English within one (1) month after receiving the comments of the Government on Draft Final Report.

(VI) Undertaking of the Government.

To facilitate smooth performance of the Study, the Government will:

(1) To provide the data and information necessary for the study.

- (2) To arrange for the quick and smooth customs clearance of the field survey equipment and materials required for the Study.
 - (3) To exempt the Team members from any taxes and any kind of charges imposed on the instruments, equipment and materials required for the field survey and on the personal effects of the members.
 - (4) To allow the Team to take all data and materials concerned including the photofilms out of Indonesia according to the security regulation of the Government.
 - (5) To provide the necessary entry and exit visa, resident and work permit, and travel permit for the Team.
 - (6) To provide the office space for the Team with equipment and utensils in Jakarta and the objective Provinces.
 - (7) To provide the counterpart personnel to cooperate and assist for the Team during the field survey.
 - (8) To make the necessary arrangement to obtain the permission of the Indonesian authorities concerned for the Team to conduct the field survey in the Objective Provinces.
 - (9) To maintain security of the life and property of the Team during its stay in Indonesia within the Indonesian regulations.
 - (10) To provide the medical services for the Team during its stay in Indonesia, if necessary.
 - (11) To provide two (2) JEEPS or PICK-UPS with drivers for the Team to carry out the field survey in the Objective Provinces.
- (VII) Undertaking of the Government of Japan.

To facilitate smooth performance of the Study, the Government of Japan will:

- (1) To dispatch the Team to conduct the Study.
- (2) To undertake on-the-job training and transfer of knowledge to the Indonesian counterpart personnel in the course of the Study.

Attached sheet

TENTATIVE WORK SCHEDULE

		1982											
		1981	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.		
		Dec.											
1. Visits of Scope of Works Mission		▬											
2. Feasibility Study													
1) Field Survey in Indonesia			▬	▬	▬				E.D.F.R. ▬				
2) Office Work in Japan							2) ▬	▬					
3. Visits of Supervisory Group			▬		▬				▬				
4. Submitting of Reports		▽ P.O.			▽ P.R.				▽ D.F.R.			▽ F.R.	

(Remarks) P.O. : Plan of Operation E.D.F.R.: Explanation of Draft Final Report

P.R. : Progress Reprt F.R. : Final Report

D.F.R. : Draft Final Report

Table 2 -- 1 Areas and Population of Indonesia, 1980.

Region	Total Areas A		Population B		Density of population
	Km ² (A)	%	1000 (B)	%	(B)/(A)
Jawa & Madra	132,187	6.89	91,270	61.9	690
Bali	5,561	0.29	2,470	1.7	444
Sumatera	473,606	24.67	28,016	19.0	59
Aceh	55,392	2.89	2,611	1.8	47
S. Sumatera	103,688	5.40	4,630	3.1	45
Lampung	33,307	1.74	4,625	3.1	139
Other Sumatera	281,219	14.65	16,150	10.9	58
Kalimantan	539,460	28.11	6,723	4.6	12
Sulawesi	189,216	9.86	10,409	7.1	55
West nusa Tenggara	20,177	1.05	2,725	1.9	135
East nusa Tenggara	47,876	2.49	2,737	1.9	57
Maluku	74,505	3.88	1,411	0.9	19
Irian jaya	421,981	21.98	1,174	0.8	3
Timor Timur	14,874	0.77	555	0.4	37
Whole Indonesia	1,919,443	100.00	147,490	100.0	77

Source: Central Bureau Statistics Jakarta, Indonesia

Table 2 -- 2 Position of Agriculture, Forestry & Fishery

Sectors	1965	1968	1973	1975	1977	1979
Agriculture, Forestry & Fisheries	58.8	51.5	40.1	31.7	31.3	29.8
Mining, Industry	14.1	14.9	21.9	28.6	34.3	32.5
Services	27.2	33.6	38.0	40.7	34.3	37.7
Gross Domestic Products	100.0	100.0	100.0	100.0	100.0	100.0

Source: Central Bureau of Statistics

Table 2- 3 Whole Household and Farm Household and Workers, 1980

Region	Whole household	Farm household	Population	Workers	Population per household	percentage of farm household	Percentage of workers
	a Unit: 1000	b Unit: 1000	c Unit: 1000	d Unit: 1000	c/a	b/a	d/c
Aceh	530.7	370.1	2,611	54.5	4.92	69.7	2.1
South Sumatera	857.3	508.6	4,630	60.0	5.40	59.3	1.3
Lampung	871.7	711.2	4,625	128.4	5.31	81.6	2.8
Whole Sumatera	5,375.7	3,569.0	28,016	705.3	5.21	66.4	2.5
Jawa	19,622.3	10,361.4	91,270	6,023.1	4.65	52.8	6.6
Kalimantan	1,322.7	811.6	6,723	116.3	5.08	61.4	1.7
Sulawesi	1,923.0	1,323.4	10,409	135.8	5.41	68.8	1.3
Whole Indonesia	30,263.0	17,468.0	147,490	7,230.7	4.87	57.7	4.9

Source: Central Bureau of Statistics

Table 2 -- 4 Farm Households Classified by Scale, 1973
Unit:1000

Scale ha	Jawa		Other Island		Total	
	Number	%	Number	%	Number	%
0.1 - 0.5	4,580	55.4	1,462	26.6	6,042	43.9
0.5 - 1.0	2,151	26.0	1,382	25.1	3,533	25.7
1.0 - 2.0	1,129	13.7	1,444	26.3	2,573	18.7
2.0 - 3.0	257	3.1	581	10.6	838	6.1
3.0 - 4.0	79	1.0	250	4.5	329	2.4
4.0 - 5.0	34	0.4	126	2.3	160	1.2
5.0 over	40	0.5	253	4.6	293	2.1
Total	8,270	100.0	5,498	100.0	13,768	100.0

Source: Census for Agriculture, Indonesia, 1973

Table 2 - 5 Trend of Population and Numbers of Workers and Agricultural Workers

		1961	1971	1980	Annual rate of growth	
					61-71	71-80
		million	million	million	%	%
Total population (A)		97.1	119.2	147.5	2.0	2.8
Java		63.1	76.1	91.3	2.1	2.2
Sumatera		15.7	20.8	28.0	3.2	3.8
Other Islands		18.3	22.3	28.2	2.1	2.9
Workers (B)		33	40	51	2.5	2.9
Agricultural workers(C)		24	28	30	1.6	1.2
Percentage	B/A %	34	23	20		
	C/B %	73	70	59		

Table 2 - 6 Export of Agricultural and Forest Products

	million US\$				
	1972	1975	1978	1979	1980
Whole export	1,778	7,103	11,643	15,590	21,908
Agricultural products	474	867	1,827	1,391	1,533
Forest products *	229	500	995	1,797	1,853

* Timber only

Table 2 - 7 Areas of the Agricultural Land

	Small Holders			Estate	Total
	Lowland	Upland	Total		
Jawa	2,632	2,872	5,505	678	6,183
%	42.6	46.4	89.0	11.0	100.0
Other island	2,209	6,454	8,663	1,548	10,211
%	21.6	63.2	84.8	15.2	100.0
Total	4,841	9,326	14,168	2,226	16,394
%	29.5	56.9	86.4	13.6	100.0

Source: Census for Agriculture, Indonesia, 1973

Table 2 - 8 Trend of Food Crop Production of Indonesia

Year	ton						
	1970	1975	1976	1977	1978	1979	1980
Rice *	15,919	15,185	15,845	15,876	17,525	17,918	20,171
Corn	2,825	2,702	2,572	3,142	4,029	3,305	3,991
Cassava	10,478	12,545	12,190	12,487	12,902	13,330	13,726
Sweet potato	2,175	2,432	2,381	2,460	2,082	2,043	2,079
Ground nut	468	379	341	408	445	417	470
Soybean	498	589	521	522	616	674	652

* Milled rice

Table 2 - 9 (1) Target of Production and Consumption of Rice for Self Sufficient

Year	Consumption per capita		Population projection 1000	Consumption requirement 1000ton	Production Target 1000ton	Available for consumption 1000ton
	kg	growth				
1978	121.70	-	135,286	16,464	17,525	15,378
1979	124.47	2.28	138,004	17,177	17,918	15,723
1980	126.49	1.62	140,778	17,807	19,989	17,540
1981	128.06	1.24	143,609	18,391	20,749	18,207
1982	129.64	1.23	146,490	18,991	21,537	18,899
1983	131.21	1.21	149,421	19,606	22,355	19,617
1984	132.79	1.20	152,412	20,239	23,204	20,362

Source: Proposal for Indonesia-Japan Government Cooperation for Rice Self-Sufficiency.

Table 2 -- 9 (2) Production Target and Realized Production in Five-years Development Plan

	Production Target 1000 ton	Realized 1000 ton	Achievement Ratio %
Pelita I (1969-73)	15,420	13,430	87.1
Pelita II (1974-78)	18,183	17,525	96.4
Pelita III (1979-1984)			
1979	17,918	17,918	100.0
1980	19,989	20,171	100.9
1981	20,749		
1982	21,537		
1983	22,355		
1984	23,204		

Source: IDC.

Remarks: Production Target from 1979 to 1984 are consumption requirement.

Table 2-10 Rice Production by Region of Indonesia, 1980

(Unit: ha, ton)

Region	Lowland rice			Upland rice			Total		
	Harvested Area	Yield	Production	Harvested Area	Yield	Production	Harvested Area	Yield	Production
Sumatera	1,600,613	3.13	5,005,523	448,675	1.50	673,147	2,049,288	2.77	5,678,670
Aceh	208,423	3.12	649,464	11,857	1.44	17,074	220,280	3.03	666,538
S. Sumatera	242,944	2.90	705,217	108,396	1.54	167,363	351,340	2.48	872,580
Lampung	151,049	3.33	502,824	121,651	1.51	183,571	272,700	2.52	686,395
Other provinces of Sumatera	998,197	3.17	3,148,018	206,771	1.48	305,139	1,204,968	2.86	3,453,157
Jawa & Madura	4,528,937	3.98	18,025,097	248,202	1.59	395,409	4,777,139	3.86	18,420,506
Bali, Nusa Tenggara	422,767	3.51	1,481,748	109,885	1.18	129,626	532,652	3.03	1,611,374
Kalimantan	564,861	2.36	1,330,288	240,600	1.24	297,511	805,461	2.02	1,627,799
Sulawesi	705,066	3.04	2,146,754	108,779	1.28	139,012	813,845	2.81	2,285,766
Maluk, Irian Jaya	1,802	2.04	3,678	24,878	0.97	24,112	26,680	1.04	27,790
Total	7,824,046	3.58	27,993,088	1,181,019	1.41	1,658,817	9,005,065	3.29	29,651,905

Source: Luas Panen Rata 2 Produksi dan Produksi Tanaman Padi dan Palewija 1980 Jakarta.

**Reference 2 - 1 Major Objectives of Agricultural Development
in PELITA III**

1. To increase food production in order to attain self-sufficiency in carbohydrate and improve the nutritional conditions of the people through provision of more protein, fats, vitamins, and minerals.
2. To improve the living standard of the farmers through increasing their income.
3. To expand employment opportunities in the agricultural sector within the framework of income distribution.
4. To increase export and reduce imports of agricultural products.
5. To support the development of the industrial sector in order to produce finished and semi-finished products.
6. To utilize, conserve and improve natural resources to continue to maintain and improve a sound environment.
7. To accelerate an integrated rural development consistent with viable regional development.

Table 3 - 1 Area and Population of Indonesia by Province in 1976.

Provinces	Total Areas		Population (thousand)	Percent
	sq. km.	Percent		
1. D.K.I. Jakarta	590	0.03	4,925	3.8
2. West Java	46,300	2.43	23,849	18.2
3. Central Java	34,206	1.80	23,675	18.1
4. D.I. Yogyakarta	3,169	0.17	2,637	2.0
5. East Java	47,922	2.52	27,079	20.7
JAVA & MADURA	132,187	6.95	82,166	62.8
6. D.I. Aceh	55,932	2.91	2,299	1.8
7. North Sumatera	70,787	3.72	7,347	5.6
8. West Sumatera	49,778	2.61	3,077	2.4
9. Riau	94,652	4.96	3,070	1.3
10. Jambi	44,924	2.36	1,746	2.9
11. South Sumatera	103,688	5.44	3,847	2.6
12. Bengkulu	21,168	1.11	625	
13. Lampung	33,307	1.75	3,452	
SUMATERA	473,606	24.86	22,480	17.2
14. West Kalimantan	146,760	7.70	2,136	1.7
15. Central Kalimantan	152,600	8.01	834	0.6
16. South Kalimantan	37,660	1.98	1,872	1.4
17. East Kalimantan	202,440	10.63	929	0.7
KALIMANTAN	539,460	28.32	5,773	4.4
18. North Sulawesi	19,023	1.00	1,931	1.5
19. Central Sulawesi	69,726	3.66	1,047	0.8
20. South Sulawesi	72,781	3.82	5,729	4.4
21. South East Sulawesi	27,686	1.45	798	0.6
SULAWESI	189,216	9.93	9,057	6.9
22. Bali	5,561	0.30	2,333	1.8
23. West Nusa Tenggara	20,177	1.06	2,474	1.9
24. East Nusa Tenggara	47,876	2.51	2,496	1.9
25. Maluku	74,505	3.91	1,309	1.0
26. Irian Jaya	421,981	22.16	1,042	0.8
INDONESIA	1,904,569	100.00	130,766	100.0

Source: Central Bureau of Statistics, Jakarta, Indonesia.

Table 3 - 2 Temperature in South Sumatera Province (1976 - 1980)

Location	Belitang			Tugumulyo			Labat			Betung			Upang		
	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.
1.	26.0	30.5	21.6	25.4	29.4	22.6	24.0	29.1	20.1	26.1	31.9	23.4	25.8	-	-
2.	26.4	31.1	21.7	25.5	30.0	22.5	24.3	29.5	20.1	26.4	32.6	22.8	26.0	-	-
3.	26.9	32.1	21.7	25.9	30.7	22.5	24.5	29.9	20.1	26.7	32.9	22.8	26.7	-	-
4.	27.2	32.6	22.2	26.2	30.5	22.8	24.7	30.3	20.2	26.9	33.0	22.8	27.2	-	-
5.	27.5	33.2	22.2	26.5	31.4	22.8	25.0	30.8	20.3	28.9	33.0	22.7	27.1	-	-
6.	28.8	33.0	21.5	26.2	31.0	22.7	24.7	30.6	19.8	28.8	33.2	22.4	27.0	-	-
7.	28.8	32.5	21.5	26.1	30.5	22.5	24.7	30.4	19.7	26.9	28.4	22.2	28.0	-	-
8.	26.9	33.1	21.5	26.1	30.9	22.7	24.6	30.9	19.1	27.1	33.5	22.5	28.1	-	-
9.	27.1	33.1	21.5	25.9	31.3	22.3	24.6	30.4	19.2	27.2	33.3	22.1	26.1	-	-
10.	27.2	33.3	21.8	26.1	31.2	22.6	24.9	30.9	19.8	27.1	33.6	22.4	26.5	-	-
11.	27.1	32.5	21.1	26.7	30.5	23.0	24.7	30.0	19.7	26.6	32.7	22.8	26.5	-	-
12.	26.4	30.2	21.9	25.8	30.0	22.8	24.6	29.3	21.3	26.6	32.8	22.5	25.7	-	-
Average	27.0	32.0	22.0	26.0	30.6	22.7	24.6	30.2	20.0	26.8	32.4	22.6	26.5	-	-

Table 3 - 3 (1) Monthly Rainfall in Aceh Province (1974 - 1978)
(mm)

District	Month												Total	Average
	1	2	3	4	5	6	7	8	9	10	11	12		
Aceh Besar	104	79	104	157	107	82	94	47	167	156	205	212	1504	125.3
" Pidie	101	123	40	70	80	37	69	64	77	113	203	238	1265	105.4
" Utara	54	80	70	109	109	102	96	57	100	110	147	196	1271	105.9
" Tenggara*	153	132	140	108	116	16	72	26	25	102	182	160	1323	110.3
" Timur	77	77	53	84	155	112	149	143	174	163	259	291	1725	143.8
" Tenggara	75	82	136	218	163	105	160	119	60	366	338	90	1920	160.0
" Barat	189	217	224	316	308	172	293	155	259	245	310	163	2855	237.8
" Selatan	203	256	248	300	161	151	217	186	230	373	333	291	2950	245.8

*1978 years data from Dinas Pertanian Aceh Province.

Table 3 - 3 (2) Monthly Rainy Days of Aceh Province (1974 - 1978)
(day)

District	Month												Total	Average
	1	2	3	4	5	6	7	8	9	10	11	12		
Aceh Besar	5	4	6	7	7	8	9	7	15	8	18	10	99	8.3
" Pidie	7	7	8	7	8	4	7	6	6	8	9	11	88	7.3
" Utara	4	5	4	5	5	4	5	5	7	7	8	8	67	5.6
" Tengah	14	16	16	18	8	9	13	6	11	18	18	12	159	13.3
" Timur	4	4	3	5	7	6	7	7	7	7	10	10	77	6.4
" Tenggara	9	5	8	12	10	5	8	8	2	16	15	9	107	8.9
" Barat	8	11	11	13	13	9	13	10	11	13	13	11	136	11.3
" Selatan	9	9	10	12	8	7	9	8	11	13	12	11	117	9.8

Source: Agricultural Service, Aceh Province.

Table 3 - 4 (1) Monthly Rainfall in South Sumatera Province (1976 - 1980)

Place	Month												Total	Ave. (mm)
	1	2	3	4	5	6	7	8	9	10	11	12		
Belitang (OKU)	351	269	370	298	125	145	143	114	188	212	278	90	2583	215
Tugumulyo (Muba)	367	254	341	271	210	206	155	214	248	261	389	450	3366	281
Tanjung Tebat (Lahat)	263	270	207	208	158	147	113	127	121	206	222	297	2339	194.9
Muara Enim	404	278	294	299	215	206	98	122	173	278	278	420	3065	255.4
Rias	227	255	230	292	179	152	164	96	170	239	275	375	2655	221
Unstri	172	186	298	310	147	125	102	87	137	189	408	277	2438	203
Schayu (Muba)	276	315	309	309	179	139	142	152	219	214	415	351	3018	257
Sungai Pinang	286	351	270	252	164	109	64	130	121	167	372	374	2662	222
Upang *(Muba)	183	221	257	217	178	114	80	104	149	180	287	284	2252	183

* 1975 - 1980.

(2) Monthly Rainy Days of South Sumatera Province (1976 - 1980)

Place	Month												Total	Ave. (day)
	1	2	3	4	5	6	7	8	9	10	11	12		
Belitang	21	16	21	15	12	10	9	8	14	14	15	25	176	15
Tugumulyo	19	13	15	17	10	13	11	11	13	14	19	20	175	15
Tanjung Tebat	21	16	19	18	12	13	9	10	11	16	17	18	180	13
Muara Enim	19	15	14	13	8	9	7	7	9	13	16	20	150	18
Rias	17	17	18	16	13	13	10	5	8	11	17	19	148	12
Unstri	13	13	15	15	10	8	9	6	9	11	15	15	139	12
Schayu	18	18	19	14	11	10	11	9	10	12	19	18	168	14
Sungai Pinang	19	16	21	22	11	8	9	8	9	13	20	22	178	15
Upang *	11	17	14	15	16	10	10	10	11	11	18	20	160	14

* 1975 - 1980

Source: Department of Agriculture Services, South Sumatera Province.

Table 3 - 5 (1) Monthly Rainfall in Lampung Province (mm)

Place	Location	Month												Total	Average
		1	2	3	4	5	6	7	8	9	10	11	12		
Whole Lampung 1)		292	315	259	214	148	132	134	126	156	179	223	351	2529	211
Way Jepara 2)	(Lamp. Timur)	200	300	200	100	100	100	50	100	100	100	100	100	1550	129
Srimeananti 2)	(Lamp. Utara)	300	300	200	300	200	100	100	200	200	200	300	300	2700	225
Metro 2)	(Lamp. Tengah)	307	200	300	50	250	100	50	100	100	100	100	200	1850	154
Gading Rejo 2)	(Lamp. Selatan)	200	100	100	100	100	50	50	50	50	100	100	200	1200	100
Sang Hyang Seri (Lamp. Tengah)		50	200	300	100	200	100	50	100	100	100	100	200	1600	133
Teginenang 3)	"	257	310	281	192	151	96	86	72	75	90	133	295	1740	145

(2) Monthly Rainy Days of Lampung Province (day)

Place	Location	Month												Total	Average			
		1	2	3	4	5	6	7	8	9	10	11	12					
Whole Lampung 1)		14	14	13	11	7	7	7	7	8	8	9	10	11	12	124	10	
Way Jepara 2)	(Lamp. Timur)	-	-	20	5	17	5	-	2	4	12	4	15	4	22	4	160	13
Srimeananti 2)	(Lamp. Utara)	20	5	24	5	-	22	5	17	4	6	4	8	4	31	4	214	17
Metro 2)	(Lamp. Tengah)	18	5	13	5	6	5	16	5	14	4	6	4	10	4	146	12	
Teginenang 3)	"	16	14	16	11	9	9	7	6	6	8	9	9	11	16	132	11	

- Note:
- 1) 1974-1980 data provided by Dinas Pertanian Lampung
 - 2) 1980 data provided by Dinas Pertanian Lampung
 - 3) 1970-1979 data provided by DI Stasiun Teginenang, Lampung
 - 4) 1980 data provided by Dinas Pertanian Lampung
 - 5) 1981 data provided by Dinas Pertanian Lampung

Table 3 - 6 Situation of Lowland Irrigation

(1) Aceh Province

District	Irrigation areas			Rainfed and others	Whole Lowland areas	Irrigation ratio (%)
	Full and Semi	Simple	Sub-total			
Aceh B.	4,934	5,652	10,586	10,450	21,044	50.3
Pidie	2,500	34,820	37,320	1,085	38,405	97.2
Aceh Utara	15,002	10,430	25,432	22,740	48,372	52.6
Aceh Tengah	-	8,031	8,031	2,520	10,551	76.1
Aceh Tenggara	-	21,033	21,033	967	22,000	95.6
Aceh Timur	5,962	5,101	11,063	13,882	24,945	44.4
Aceh Barat	915	19,104	20,019	9,420	29,439	68.0
Aceh Selatan	3,581	11,930	15,511	500	16,011	96.9
Total	32,894	116,101	148,995	61,772	210,767	70.7

Source: Informasi Data Pertanian Tanaman Pangan Propinsi Daerah Istimewa Aceh, 1981

Table 3 - 6 (2) South Sumatera Province

District	Irrigation areas			Rain-fed	Other lowland	Total lowland	Irrigation Ratio(%)
	Full and Semi	Simple	Sub total				
Palembang	-	-	-	-	8,800	8,800	0
Muba	-	-	-	3,125	109,602	112,727	0
O.K.I.	-	4,700	4,700	6,440	77,843	88,983	5.3
O.K.U	16,331	7,252	23,583	15,426	15,000	54,009	43.7
L.I.O.T	-	4,920	4,920	3,223	12,201	20,344	24.2
Lahat	-	20,315	20,315	1,045	-	21,360	95.1
Mura	7,028	1,838	8,866	7,413	4,191	20,470	43.3
PKI.Pinang	-	-	-	-	-	-	-
Bangka	-	100	100	-	-	100	100.0
Belitang	-	-	-	20	-	-	0
Total	23,359	39,125	62,484	36,692	227,717	326,893	19.1

Remark: Other lowland included Tidal and flooded land

Source: Dinas pertanian Tanaman pangan Propinsi Dati I Sumatera Selatan.

(3) Lampung Province (1980)

District	Irrigation areas			Rain-fed	Others	Total Lowland	Irrigation Ratio (%)
	Full and Semi	Simple	Sub-total				
Lampung Utara	228	6,918	7,146	7,579	6,621	21,346	33.5
Lampung Tengah	47,117	4,112	51,229	4,421	6,800	62,450	82.0
Lampung Selatan	10,771	8,946	19,717	22,503	3,327	45,547	43.3
Total	58,116	19,976	78,092	34,503	16,748	129,343	60.4

Source: Agricultural Service of Provincial Government in Lampung

Table 3 - 7 Rice Production in Indonesia (1975 - 1980)

Province	1975		1976		1977		1978		1979		1980	
	Harvested Area ha	Production ton	Harvested Area ha	Production ton	Harvested Area ha	Production ton	Harvested Area ha	Production ton	Harvested Area ha	Production ton	Harvested Area ha	Production ton
1. D.I. ACEH	214,496	850,726	220,860	882,054	217,042	665,856	212,877	604,571	243,098	697,692	226,326	678,996
2. North SUMATRA	477,528	1,709,244	400,742	1,708,208	395,825	1,211,140	426,539	1,346,208	423,502	1,346,208	532,197	1,480,662
3. West SUMATRA	262,384	933,350	240,388	942,942	252,729	809,814	255,883	828,489	266,013	898,242	289,498	1,012,141
4. RIAU	139,011	290,055	89,247	256,190	88,822	191,600	86,377	196,234	83,889	176,012	134,578	276,040
5. JAWBI	136,504	414,204	110,703	378,435	114,936	306,634	116,498	311,184	153,447	416,822	146,969	388,147
6. South SUMATRA	353,286	938,897	234,281	753,710	235,343	624,696	250,527	647,895	240,157	681,911	359,266	890,172
7. BENGKULU	69,952	206,001	54,099	187,590	51,283	137,369	51,502	135,649	49,400	128,868	70,013	179,425
8. LAMPUNG	233,927	696,667	121,717	528,552	128,111	408,605	128,872	411,702	130,663	424,499	272,135	702,821
9. D.K.I. JAWARTA	9,120	26,463	13,050	40,185	17,764	45,672	18,863	46,541	17,112	45,852	21,544	63,402
10. West JAWA	1,864,344	6,964,986	1,700,183	7,000,842	1,578,176	4,879,080	1,712,718	5,567,396	1,708,084	5,714,112	1,859,599	6,523,161
11. Central JAWA	1,306,186	5,035,638	1,140,185	4,782,463	1,199,327	3,759,890	1,398,874	4,421,252	1,243,399	4,066,907	1,336,485	5,206,034
12. D.I. YOGYAKARTA	145,810	539,683	85,998	413,398	82,343	291,577	93,477	349,855	98,505	386,370	129,303	467,519
13. East JAWA	1,327,810	5,376,269	1,277,013	5,705,927	1,253,254	4,395,900	1,309,634	4,791,541	1,338,403	5,166,954	1,431,047	6,276,783
14. BALI	145,664	636,900	140,189	650,754	144,878	526,375	158,830	564,060	172,994	633,822	182,373	718,293
15. West NUSA TENGGARA	207,189	727,279	191,397	730,344	173,123	482,882	203,548	612,075	186,653	556,087	223,516	668,198
16. East "	120,726	243,247	45,548	138,900	58,460	129,255	54,510	114,907	47,878	115,961	145,658	257,107
17. TIMOR TIMOR	-	-	-	-	-	-	-	-	-	-	-	-
18. West KALIMANTAN	295,709	529,699	191,348	442,146	194,059	388,118	192,190	398,824	187,977	406,970	304,141	580,816
19. Central KALIMANTAN	113,228	198,896	67,317	140,654	66,735	106,375	67,656	101,687	73,501	134,948	123,660	211,972
20. South KALIMANTAN	256,317	612,962	252,869	610,654	263,813	539,761	279,219	643,408	274,128	667,468	289,597	683,708
21. East KALIMANTAN	76,535	131,612	34,709	73,340	35,160	57,030	32,392	62,808	34,021	65,422	78,171	181,755
22. North SULAWESI	79,948	253,183	60,913	216,506	62,382	169,687	61,180	177,728	56,022	164,649	98,094	204,197
23. Central SULAWESI	93,577	299,473	61,130	192,417	59,917	139,607	61,154	129,952	67,200	245,421	101,204	200,190
24. South "	519,380	1,590,893	485,029	1,771,269	514,073	1,518,572	579,345	1,688,207	558,088	1,664,684	607,828	1,829,692
25. South East SULAWESI	28,427	47,422	9,528	23,175	11,701	20,559	14,012	24,829	12,416	25,043	31,682	49,589
26. MALUKU	17,475	16,585	502	1,198	522	1,172	509	891	587	1,181	22,486	16,517
27. IRIAN JAYA	563	1,285	372	1,023	378	788	3,087	1,735	963	1,766	966	1,555
TOTAL INDONESIA	8,495,096	29,201,619	7,229,417	28,575,074	7,202,360	21,808,340	7,698,409	24,172,366	7,675,118	24,731,872	9,018,335	29,773,962

Source: Department of Agriculture Indonesia.

Table 3 - 8 Rice Production and Import

Years	Rice production			Milled rice:1000 ton
	Jawa	Other island	Total	Import
1975	9,330	5,855	15,185	693
1976	9,562	6,283	15,845	1,301
1977	9,334	6,542	15,876	1,973
1978	10,607	6,918	17,525	1,842
1979	10,868	7,050	17,918	1,922
1980	12,531	7,640	20,171	2,012

Source: Statistical Pocketbook of Indonesia, Bulog,

Table 3-9 The production Status of Agricultural Products in Indonesia

Crops	Area Harvested (1000 ha)				Yield (kg/ha)				Production (1000 ton)			
	1969-71	1977	1978	1979	1969-71	1977	1978	1979	1969-71	1977	1978	1979
Cereals, Total	10825	10935	11961	11450	2006	2424	2493	2581	21711	26504	29814	29550
Paddy	8158	8360	8929	8850	2346	2794	2887	2977	19136	23356	25781	26350
Maize	2667	2567	3025	2600	965	1224	1332	1231	2575	3143	4029	3200
Roots & Tubers, Total	2045	1773	1773	1800	6962	8705	8746	8883	14239	15434	15510	15990
Potatoes	16	33	36	35	6111	7522	7117	7143	99	248	255	250
Sweet potatoes	361	326	301	309	6131	7546	6930	7605	2215	2460	2083	2350
Cassava	1424	1364	1383	1398	7512	9155	9330	9371	10695	12488	12902	13100
Pulses, Total	500	620	622	640	502	500	500	501	251	310	311	320
Soybeans	643	646	733	710	728	809	840	810	468	523	616	575
Groundnut in shell	376	506	514	517	1230	1346	1427	1430	462	681	733	739
Castor beans	10	7	7	7	353	262	275	288	4	2	2	2
Sesame seed	12	16	16	16	200	375	375	375	2	6	6	6
Seed cotton	10	7	4	4	698	486	486	568	7	3	2	2
Cotton seed	-	-	-	-	-	-	-	-	5	2	1	1
Coconut	-	-	-	-	-	-	-	-	5892	10756	10800	753
Copra	-	-	-	-	-	-	-	-	953	951	950	950
palm kernels	-	-	-	-	-	-	-	-	48980	92307	99422	115000
Palm oil	-	-	-	-	-	-	-	-	217900	497438	524956	610000
Vegetables	-	-	-	-	-	-	-	-	4611	1891	1937	1922
Melons, Total	-	-	-	-	-	-	-	-	-	-	-	-
Fruit Excl	-	-	-	-	-	-	-	-	3013	3624	4717	4510
Melons, Total	24	24	26	27	10714	10996	12636	12111	150	265	323	300
Cabbages	9	14	19	19	4887	5497	4643	4649	43	77	89	90
Tomatoes	21	24	24	25	6451	6414	6250	6260	133	152	150	154
Cucumber & Gherkins	100	105	104	104	2633	2048	1923	1923	263	215	200	200
Chilies-pepper	36	41	39	39	4537	4155	4772	4771	163	172	185	188
Green Onions Dry	70	125	153	165	148737	116242	97252	97927	10352	14503	14880	16158
Sugar cane	-	-	-	-	-	-	-	-	760	1106	1105	1325
Centrifugal	-	-	-	-	-	-	-	-	-	-	-	-
Raw Sugar	-	-	-	-	-	-	-	-	40	58	61	65
Avocados	-	-	-	-	-	-	-	-	300	344	418	300
Mangos	-	-	-	-	-	-	-	-	107	154	203	200
Pineapple	-	-	-	-	-	-	-	-	-	-	-	-

Source: STATISTIK Indonesia 1979/80, Biro Statistik Pusat Indonesia

Table 3 - 10 Area Harvested, Production and Yield of Food Crops in Indonesia (1975 - 1979)

Food Crops	Year				
	1975	1976	1977	1978	1979
Paddy, Total					
1, Area harvested x1000 (ha)	8,495	9,368	8,359	8,929	8,849
2, Production x1000 (ton)	22,330	23,300	23,347	25,771	26,350
3, Yield (ton/ha)	2.6	2.7	2.7	2.8	2.9
Lowland Rice.					
1, Area harvested x1000 (ha)	7,334	7,229	7,202	7,698	7,663
2, Production x1000 (ton)	20,849	21,851	21,808	24,172	24,818
3, Yield (ton/ha)	2.8	3.0	3.0	3.1	3.2
Upland Rice.					
1, Area harvested x1000 (ha)	1,160	1,139	1,157	1,230	1,186
2, Production x1000 (ton)	1,480	1,449	1,538	1,599	1,531
3, Yield (ton/ha)	1.2	1.2	1.3	1.3	1.3
Maize.					
1, Area harvested x1000 (ha)	2,444	2,096	2,566	3,024	2,514
2, Production x1000 (ton)	2,902	2,572	3,142	4,029	3,305
3, Yield (ton/ha)	1.1	1.2	1.2	1.3	1.2
Cassava.					
1, Area harvested x1000 (ha)	1,410	1,353	1,363	1,382	1,414
2, Production x1000 (ton)	12,545	12,190	12,487	12,902	13,330
3, Yield (ton/ha)	8.6	8.9	9.0	9.2	9.3
Sweet Potatoes.					
1, Area harvested x1000 (ha)	310	301	326	300	278
2, Production x1000 (ton)	2,432	2,381	2,460	2,082	2,048
3, Yield (ton/ha)	7.8	7.9	7.5	6.9	7.3
Peanuts.					
1, Area harvested x1000 (ha)	474	414	507	506	489
2, Production x1000 (ton)	379	341	408	445	417
3, Yield (ton/ha)	0.8	0.8	0.8	0.8	0.8
Soybeans.					
1, Area harvested x1000 (ha)	751	646	646	733	764
2, Production x1000 (ton)	589	521	522	616	673
3, Yield (ton/ha)	0.7	0.8	0.8	0.8	0.9

Source: Statistics of Department of Agricultural Food Crop, Indonesia

Table 3 - 11 Target and Past Record of Rice Production in PELITA III in South Sumatera Province

Items	Realize		Forecast	Target	
	1979	1980	1981	1982	1983
Paddy Production (Increased %)	986,907 (10.73)	1,092,754 (16.0)	1,267,360 (26.9)	1,607,629 (7.7)	1,732,083
Stocked Rice	474,702	525,615	609,600	773,270	833,132
Rice Requirement	711,187	730,593	753,022	773,567	805,223
Shortage	-236,485	-204,978	-143,422	-5,297	+27,909
Availability per capita/year (Increased %)	106.8 (7.8)	115.11 (12.5)	129.53 (22.7)	158.91 (4.2)	165.55

Source: Program of food crops production in Pelita III in South Sumatera by Dinas Pertanian of S. Sumatera.

Table 3 - 12 Production of Food Crops in 1980 in South Sumatera Province

Items	Production	Need for consumption		Realization of consumption per Capita	Shortage	
		Total	per Capita/year		Total	per capita
	ton	ton	kg	kg	ton	kg
Rice	1,092,754	730,593	160.0	115.11	-204,978	-44.89
Maize	6,856	83,333	18.25	1.35	-77,163	-16.90
Cassava	206,453	250,000	54.75	41.21	-61,836	-13.54
Kaeangan	18,522	66,666	14.60	3.55	-50,454	-11.05
	1,324,585	1,130,592	247.6	161.22	-394,431	-86.38

Source: Program of food crops production in Pelita III in South Sumatera by Dinas Pertanian of S. Sumatera.

Table 3 - 13 Characteristics of Improved Varieties of Rice Recommended in Indonesia * (1943 - 1980)

Varietas Nama	Released Year	Type	Growth duration	Plant form	Plant high	Number of tiller	Stem	leaf form	Yield	Disease Susceptibility	Tasty
Bergawan	1943	India	155-160	turf	145-165	Many	Violet	V	M	Pericolaria Oryzae	G
Sigadis	1953	"	140-145	U.R.	145-150	"	"	R.W.	M.H.	"	P
Kanjaja	1954	"	155-160	turf	145-165	"	"	"	"	"	M
Jelita	1955	"	"	U.R.	"	"	Yellow	"	"	"	"
Selates Mulan	1961	"	120	"	140-150	Less	Violet	R	M	"	G P
Sytha	1963	"	145-150	turf	145-165	Many	"	"	M.H.	"	G
Kartuna	"	"	105	U.R.	140-150	Less	"	"	M	"	"
FB-5	1967	"	130-145	"	110-130	Many	Green	"	B	"	P
FB-8	"	"	120-130	"	80-100	"	"	"	B	Xanthomonas C.O.	G
Sisngat	1969	"	125-130	"	105-112	Medium	"	"	B	Tungro	"
Dewi Ratih	"	"	135-145	turf	110-115	"	Violet	R.W.	M.B.	Pericolaria Oryzae	"
Felita 1/1	1971	"	135-	U.R.	115-125	Many	Green	R	B	Tungro. 1,2,3 S Xanthomonas C.O.	"
Felita 1/2	"	"	136-	"	110-120	"	Violet	"	"	Tungro. 1,2,3 S Xanthomonas C.O.	"
FB-20	1974	"	120	"	156	Medium	Green	N	"	1,2,3 S Xanthomonas C.O.	M
FB-26	1975	"	123-	"	85- 90	Many	"	R	M.H.	Xanthomonas C.O. Tungro 2, 3 S	"
FB-28	1973	"	109-	"	80-	Medium	"	"	B	Xanthomonas C.O.	"
FB-30	1975	"	112-	"	73-	"	"	"	"	Tungro 2,3 S Xanthomonas C.O.	"
Nilii	6) 1976	"	130-	"	100-120	"	"	"	"	1,2,3 S	"
Makmur	6) "	"	130-140	"	83-110	"	"	"	"	1,2,3 S	"
Cenar	6) "	"	140-150	"	120-130	"	"	"	"	1,2,3 S	"
FB-34	"	"	130-140	"	125-130	"	"	"	"	2 S	"
Gata	7) "	"	115-130	"	70- 80	"	"	"	"	Ehizoctenia Solani Tungro 1,2,3S Pericolaria Oryzae	G
Gati	7) "	"	105-130	"	65- 85	"	"	"	M.H.	Tungro 1,2,3S Pericolaria Oryzae	M
FB-32	1977	"	140-145	"	85	too many	"	"	"	35 Xanthomonas C.O.	"
Brantas	1978	"	125-130	"	105-110	Medium	"	"	"	75 Pericolaria Oryzae Xanthomonas C.O.	P
Seraya	"	"	120-130	"	95-100	"	"	"	"	25	"
Asahan	"	"	115-125	"	95-110	"	"	"	"	75 Pericolaria Oryzae	G
Citarah	"	"	125-130	"	100-110	"	"	"	"	Xanthomonas C.O. 35	"
FB-36	"	"	110-120	"	70- 80	"	"	"	"	35 Pericolaria Oryzae Xanthomonas C.O.	P
FB-38	"	"	115-125	"	90-100	"	"	"	"	Pericolaria Oryzae Xanthomonas C.O.	"
Segara	6) 1980	"	122-132	"	70- 85	"	"	S	B	Virus, Xanthomonas Pericolaria Oryzae	"
Cisafate	"	"	135-145	"	105-120	"	"	R	"	"	G
Citarah	"	"	"	"	109-115	"	"	"	M	"	"
Ajung	"	"	"	"	105-120	"	"	"	M.H.	"	"
FB-42	"	"	"	"	90-105	Many	"	"	"	Tungro 3S Xanthomonas C.O. Pericolaria Oryzae	P

Notes: 1): Many = 25 - 35, Medium = 25 - 15, Less = 14 down 2): R = Rough, W = Wide, N = Narrow, S = Smooth & Soft
 3): W = 5 - 61, MI = 4.0 - 5.1, M = 3.0 - 4.6 4): 1,2,3, S = biotype 1,2,3 sensitivity, 5): G = Good
 G.P. = Good & Perfume, M = Medium or Poor P = Poor 6): Highland varieties 7): lowland & upland varieties
 * Varietas Unggul Direktorat Bina Produksi Tanaman Pangan JAKARTA 1980

Table 3 - 14 Planted Area and Percentage of Improved Varieties in Aceh Province

District	Season	Total Planted Area (ha)	P 1/2	Varieties										Others (Other Var. Name)	1) Remark			
				P85	P88	C4-63	P820	P822	P826	P828	P829	P830	P832			P834	P836	P838
A. Bontar	W.S.	5810 (100)	-	10.4	6.8	1.7	-	-	71.6	-	-	0.3	46.6	0.3	1.6	5.8	5	PI/1 PI/2 Asahan
	D.S.	2930 (100)	-	-	0.2	-	0.6	2.0	8.7	5.4	-	9.5	65.9	0.3	7.2	0.2	-	
A. Pedic	W.S.	32740 (100)	-	0.08	0.2	0.1	-	-	0.5	-	0.1	-	37.7	-	29.5	31.8	0.02	Asahan
	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Umeta	W.S.	24170 (100)	-	-	-	-	-	-	-	-	2.0	-	15.5	-	46.1	36.4	-	-
	D.S.	14010 (100)	-	-	-	-	-	-	-	-	-	-	21.1	-	31.4	47.5	-	-
A. Timar	W.S.	9750 (100)	-	1.6	1.6	-	0.3	1.1	4.3	-	-	13.1	26.5	1.1	38.6	10.4	1.1	Seraya PI/1 PI/2
	D.S.	400 (100)	-	-	-	-	-	-	4.2	-	-	-	15.4	-	51.7	28.7	-	-
A. Tengah	W.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A. Borac	W.S.	1690 (100)	-	0.4	0.1	-	-	-	1.2	-	-	-	72.2	-	18.6	6.4	1.1	PI/1
	D.S.	270 (100)	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	PI/1 PI/2
A. Selacah	W.S.	5140 (100)	-	12.4	3.6	0.2	-	-	7.8	-	-	-	71.5	-	1.9	0.2	25.6	-
	D.S.	950 (100)	26.2	20.9	7.9	10.4	-	-	-	-	-	-	-	-	-	-	-	-
A. Tengahala	W.S.	7670 (100)	-	0.3	1.0	0.1	-	-	0.5	-	-	-	42.8	-	28.9	26.2	0.1	Asahan
	D.S.	4630 (100)	2.4	2.7	4.0	2.5	-	-	3.5	-	-	-	27.6	-	32.6	24.8	-	-
AVERAGE	W.S.	86670 (100)	-	4.3	12.2	0.53	0.3	1.4	4.8	2.0	0.1	6.7	50.7	0.7	23.6	16.7	4.9	-
	D.S.	23190 (100)	16.3	11.8	13.8	6.5	0.6	2.0	2.7	5.4	-	9.5	51.5	0.3	30.7	25.3	-	-

Source: W. S. 1. Data obtained from D. N. I. 1970. 2. Data obtained from National Agricultural Experiment Station of Aceh Province.

Table 3 - 15 Planted Area and Percentage of Improved Varieties in South Sumatera Province
(1980/81, 1980)

District	Season	Total Planted area	P 1/1	P 1/2	Improved varieties					Other P.B. Varieties	Other Bogor Local Varieties	
					PB-5	C4-64	PB-32	PB-36	PB-38			Serayu
Palembang	W.S.	7,055 ha (100) %	5	3.2	2.3	-	-	-	0.5	-	0.14	89
	D.S.	-	-	-	-	-	-	-	-	-	-	-
Mura	W.S.	32,712 ha (100) %	8.00	6.3	2.7	0.05	0.06	-	0.18	0.21	0.73	81.7
	D.S.	32,603 ha (100) %	8.02	6.3	2.7	0.05	0.06	-	0.18	0.1	0.51	82.0
Okla	W.S.	-	-	-	-	-	-	-	-	-	-	-
	D.S.	75,242 ha (100) %	10.0	9.54	4.27	4.84	-	-	0.18	-	1.64	33.6
Oku	W.S.	37,610 ha (100) %	9.22	8.0	2.37	1.12	23.6	25.6	2.20	0.54	-	1.23
	D.S.	3,495 ha (100) %	13.0	11.7	1.31	0.4	30.5	35.4	1.31	1.03	3.03	0.01
L10C	W.S.	20,215 ha (100) %	0.64	0.54	0.47	-	0.7	-	0.01	-	-	97.4
	D.S.	10,215 ha (100) %	0.64	0.54	0.47	-	0.7	-	0.01	-	-	97.4
Lehat	W.S.	18,394 ha (100) %	9.81	8.22	2.82	0.55	0.66	0.5	0.15	0.6	-	67.6
	D.S.	3,333 ha (100) %	5.37	2.31	3.81	14.1	4.32	-	0.00	-	3.18	64.3
Mura	W.S.	7,451 ha (100) %	1.31	1.11	3.35	0.56	23.2	40.8	14.8	1.0	4.71	8.87
	D.S.	10,977 ha (100) %	6.12	2.42	12.5	1.87	11.6	20.3	7.7	0.78	7.61	28.9
Total:	W.S.	123,435 ha (100) %	6.86	4.44	0.30	0.81	8.81	10.3	1.72	0.24	0.41	62.6
	D.S.	146,048 ha (100) %	7.96	6.92	35.8	2.98	1.81	2.43	0.8	0.08	1.51	71.3

Note: W.S. : Wet season D.S. : Dry season

Source: Estimated from the statistics of Agriculture Service in South Sumatera province.

Table 3 - 16 Planted Area and Percentage of Improved Varieties in Lampung Province
(1980, 1980/1981)

(*)

District	Season	Total Planted area (ha)	Old Improved Vari					Biotype 2.			Cinan-Cinada-diri								
			P 1/1	P 1/2	PB5	GA-63	PB26	PB30	PB32	PB36		PB38	Asahan	Cinam	Semaru	Seraya	PB42		
Lampung Selatan	W.S.	19,874.5 ha (100) %	58.1	9.0	1.7	3.0	-	0.00	0.00	11.3	11.8	2.7	2.0	0.00	-	-	-	-	0.33
	D.S.	6,170 ha (100) %	56.1	7.0	0.63	0.21	0.7	-	-	12.0	16.4	7.1	-	-	1.7	-	-	-	-
Lampung Tengah	W.S.	58,560 ha (100) %	0.08	-	-	-	-	-	81.3	18.3	-	-	0.01	-	-	0.01	-	-	0.01
	D.S.	25,762 ha (100) %	0.13	-	-	-	5.6	-	-	81.9	12.2	-	-	-	-	-	-	-	-
Lampung Utara	W.S.	2,135 ha (100) %	13.6	23.3	-	2.6	-	-	-	21.0	38.3	-	-	0.13	0.74	-	-	-	-
	D.S.	603 ha (100) %	10.9	12.2	-	-	14.2	-	-	22.2	40.2	-	-	-	-	-	-	-	-
Total	W.S.	80,589.5 ha (100) %	23.93	10.77	0.57	1.87	-	0.00	27.1	16.87	16.7	0.9	0.67	0.04	0.25	0.00	0.00	0.00	0.11
	D.S.	32,533 ha (100) %	21.71	6.4	0.21	0.07	6.8	-	-	38.7	22.93	2.37	-	-	0.57	-	-	-	-

Note: W.S. = Wet season D.S. = Dry season
Source: Katedanated from the statistics of Agriculture Service in Lampung province.

Table 3 - 17 Expectable Strain of Upland Rice in Breeding Stage in CRIF

No.	No. of Strain	Cross	Plant height	Growth duration	Amylose	Resistance to Leaf blast
1.	B2991b-Tb-4-30-2-2-3	B9c-Md-3-3/B2732	104	105	21.1	R
2.	B3620-Tb-2	IR1909-1-3-3-3//C4-63// Arias	133	113	23.7	MR
3.	B2990c-Tb-77-3-3	B9c-Md-3-3/B2731	111	105	24.4	MR
4.	B2995c-Tb-132-1-2	B9c-Md-3-3/Genjah Lampung	107	112	23.7	R
5.	B2790b-Tb-162-2-5	Gogo 14/Kakatia	87	105	25.4	MS
6.	B3622f-Tb-14-2	IR 1909-1-3-3-3/B981d- SI-100	140	105	24.4	R
7.	B3664f-Tb-21-5	IR 36//C4-63gb/Arias	112	105	23.1	S
8.	B3619c-Tb-8-1-4	IR 1909-1-3-3-3/Felita I-1/Genjah Lampung	119	112	21.7	R
9.	B3623g-Tb-21	IR 1909-1-3-3-3/C4-63gb/ Arias	105	106	22.7	R
10.	B3623g-Tb-48	IR 1909-1-3-3-3//C4-63gb/ Arias	107	104	25.4	R
11.	B981k-Tb-11	C4-63gb/Arias	100	126	22	MR
12.	C22	Philippines	115	132	27	MR
13.	IR 9575	"	105	131	23	R
14.	S 55-31-2	"	110	129	18	R

Quotation: Report of Presurvey team of Indonesia seed production

Table 3-18 Expectable Strain of Tidal Swamp Rice

No.	No. of Strain	No.	Plant height	Growth duration	Amylose contents	Taste	1 biotype	2	3	leaf bright	leaf
1.	B1050c-Mr-18-2	115	105-150	136	26.0	Kurang	S	-	-	M	M
2.	B1043d-Sm-28-6-2-1	198	109-165	134	23.4	Enak	S	-	-	MS	M
3.	B1050d-Kn-1-1-1-1-3	183	104-150	121	26.4	Kurang	S	-	-	(M)	M
4.	B1050d-Kn-46-1-1-4-2-3	187	110-150	118	25.5	Kurang	S	-	-	K	-
5.	B2489d-Pn-1-76-8 (M)	147	110-140	135	21.0	Enak	R(3)4	8		-	-
6.	B2484b-Pn-28-3-Mr-1	33	108-130	135	20.0	Enak	R	-	-	M	-
7.	B922c-Mr-69	95	95-160	136	25.1	-	S	-	-	H	M
8.	B922c-Mr-21	94	100-155	136	25.5	-	M	-	-	-	-
9.	B922c-Mr-11-3-2	-	106	137	25.4	-	MR	-	-	MS	I
10.	BKN 6986-29	-	107-170	150	22.4	Enak	S	-	-	MR	M
11.	BKN 6986-108-2	91	106-180	135	28.0	Kurang	S	-	-	MS	M
12.	BKN 6987-129	89	107	137	25.2	-	S	-	-	MS	M
13.	BKN 6986-70	-	145	130	25.7	-	-	-	-	S	I
14.	BKN 6986-221-2	-	135-160	125	24.7	-	-	-	-	S	M
15.	BKN 6986-59-12	-	147	126	-	-	-	-	-	S	M
16.	BR 229-B-88	-	188	152	-	-	-	-	-	-	-
17.	Chenab sel 64-117	-	185	143	-	-	-	-	-	-	-
18.	BKN 7022-6-4	-	158	143	-	-	-	-	-	-	-
19.	CN 539	-	154	152	-	-	-	-	-	-	-
20.	IET 5656	-	128	147	-	-	-	-	-	-	-
21.	SPR 7292-296-1-3-8-1	-	-	-	-	-	-	-	-	-	-
22.	FRG 10	-	191	138	-	-	-	-	-	-	-
23.	B3752g-Kp-9-4	-	161	134	-	-	-	-	-	-	-
24.	B3752g-Kp-116-3	-	140	134	-	-	-	-	-	-	-
25.	B3063b-Kp-89-1-2-2-2-2	-	117	126	-	-	-	-	-	-	-
26.	B3064b-Kp-40-3-1-9-1	-	124	148	-	-	-	-	-	-	-
27.	B2791b-Mr-196-2-3-1-18-Kp-2	-	120	134	-	-	-	-	-	-	-

Note: Quoted from the preliminary survey report

Table 3 - 19 Existing Area of Paddy Cultivation in Aceh Province (1980)
(ha)

District	Lowland		Upland	Total
	Irrigated	Rainfed		
1. Aceh Besar	10,586	10,458	124	21,168
2. Aceh Pidie	37,320	1,035	-	38,405
3. Aceh Utara	25,432	22,940	2,154	50,526
4. Aceh Tengah	8,031	2,520	350	10,901
5. Aceh Timur	21,033	967	7,391	32,336
6. Aceh Barat	11,063	13,882	1,917	31,356
7. Aceh Selatan	20,019	9,420	3,325	19,336
8. Aceh Tenggara	15,511	500	475	22,475
9. Kodva			234	234
10. Total	148,995	61,772	15,970	226,939

Source: Agriculture Service, Aceh Province

Table 3 - 20 Existing Area of Paddy Cultivation in S. Sumatera Province (1980)
(ha)

District	Lowland field				Upland field	Total
	Irrigated	Rainfed	Flooded	Tidal		
1. Muba	-	3,125	43,900	63,700	12,680	125,400
2. Oki	4,700	6,440	75,870	1,960	12,660	101,630
3. Oku	23,583	15,426	15,000	-	30,000	84,000
4. Liot	4,920	3,223	12,200	-	33,530	53,870
5. Lahat	20,315	1,045	-	-	18,070	39,430
6. Mura	8,866	7,413	4,190	-	19,550	40,020
7. Banga	100	-	-	-	6,670	6,690
8. Belitang		20	-	-	1,500	1,500
9. Palembang		-	8,800	-	-	8,800
10. Total	62,484	36,692	161,060	65,660	134,660	461,340

Source: Agriculture Service, South Sumatera Province.

Table 3 - 21 Existing Area of Paddy Cultivation in Lampung Province (1980)
(ha)

District	Lowland field				Upland field	Total
	Irrigated	Rainfed	Flooded	Tidal		
Lampung Selatan	19,976	22,503	1,498	1,826	44,813	90,616
Lampung Tengah	51,229	4,421	6,800	-	58,144	120,594
Lampung Utara	7,146	7,579	5,946	675	19,289	40,635
Total	78,351	34,503	14,244	2,501	122,246	251,845

Source: Agriculture Service, Lampung Province

Table 3-22 Monthly Rate of Seeding of Rice during 1974 to 1978 in Aceh Province

(%)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Aceh Besar	3.63	1.85	2.04	2.56	0.95	0.31	0.71	4.46	18.13	28.03	20.61	16.72	100
Sabang	-	-	-	-	-	-	-	-	-	-	-	-	-
Pidie	24.25	22.12	12.19	7.27	3.27	2.94	6.87	4.49	1.52	3.36	3.81	7.91	100
Aceh Utara	15.17	10.16	3.48	0.56	0.88	4.50	3.19	2.60	2.25	5.82	27.31	24.08	100
Aceh Tengah	20.31	5.76	2.17	0.38	0.14	0.93	0.69	0.59	-	11.84	21.70	35.49	100
Aceh Timur	2.50	0.04	0.03	0.26	1.14	0.90	0.45	2.28	13.29	25.70	38.84	14.57	100
Aceh Tenggara	7.65	3.36	4.16	5.80	5.10	7.57	5.18	5.39	11.21	22.82	11.67	10.09	100
Ach Barat	0.07	-	-	0.12	0.01	-	0.63	12.45	38.35	33.76	13.78	0.83	100
Aceh Selatan	0.08	1.11	1.36	3.02	5.04	9.37	13.95	34.74	18.63	9.55	3.15	-	100
Average	9.21	5.55	3.18	2.50	2.07	3.31	3.96	8.37	12.92	17.61	17.61	13.71	100

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Table 3 - 23 : Harvested, Yield and Production of
Upland Rice in Aceh Province (1971 - 1980)

Year	Harvested Area ha	Yield ton/ha	Production ton
1971	18.605	2.344	43.608
1972	19.246	2.319	44.633
1973	21.339	2.268	48.395
1974	20.985	2.143	44.967
1975	18.563	2.055	38.150
1976	24.673	2.345	57.870
1977	24.106	2.186	52.693
1978	24.339	2.344	57.056
1979	15.644	2.291	35.847
1980	15.319	1.991	30.501

Source: Agriculture Service in Aceh Province

Table 3 - 24 Acreage and Production of Upland rice in South Sumatera Province (1976 - 1980)

District	1976		1977		1978		1979		1980	
	Area(ha)	Production (ton)	Area(ha)	Production (ton)	Area(ha)	Production (ton)	Area(ha)	Production (ton)	Area(ha)	Production (ton)
1. Muba	5,897	6,487	6,087	7,891	17,697	21,800	3,784	4,435	3,452	3,690
										1.1
2. Oki	9,950	9,989	12,521	13,136	21,954	26,616	11,044	13,758	12,565	18,464
										1.5
3. Oku	27,110	25,254	27,601	28,877	26,616	33,160	26,610	33,288	26,685	33,356
										1.3
4. Muara Enim	30,313	33,032	33,513	38,443	29,523	36,242	32,647	50,592	31,395	47,152
										1.5
5. Lahat	13,882	29,009	11,486	26,107	13,209	30,056	13,678	30,451	12,247	27,016
										2.2
6. Mura	15,719	25,339	16,194	31,578	12,679	20,723	16,244	28,592	18,214	30,428
										2.0
7. Bangka	15,779	11,660	16,300	12,232	13,200	11,886	12,325	7,506	5,718	4,474
										0.8
8. Belitang	1,454	571	1,564	776	1,270	589	1,021	461	1,120	672
Total	119,604	141,341	125,266	153,030	136,148	181,072	117,353	189,031	108,376	165,472

Source: Agriculture Service, South Sumatera Province

Table 3-25 Yield of Rice in Aceh Province (1980) ton = $\frac{\text{Production}}{\text{Harvested Area}}$

District	Low land						Upland	
	New Bimas		Common Bimas		Non Intensification	Average	1979/80	Average
	1979/80	1980	1979/80	1980				
Aceh Besar	5.4	6.0	4.2	5	2.9	4.7	1.7	3.64
Pidie	8.0	-	4.8	6.1	3.4	5.6	-	4.67
Utara	6.9	8.0	4.5	5	3.4	5.6	2.1	4.40
Tengah	4.0	-	3.5	-	2.3	3.3	1.8	2.40
Timur	5.5	6.5	4.0	4.8	3.0	4.8	2.0	3.45
Tenggara	4.9	6.4	4.1	5.0	2.8	4.6	2.0	2.9
Barat	4.5	6.5	4.0	4.8	2.7	4.5	1.9	2.79
Solatan	5.0	6.2	4.0	5.0	2.9	4.6	2.0	3.1
TOTAL	5.53	6.6	4.14	5.09	2.93	4.7	1.93	3.42

Source: Agricultural Statistic, Department of Agriculture, Province Aceh.
 Note: Yield of Lowland Average = New Bimas + Common Bimas + Non Intensification
 1979/80: Rainy season cropping, 1980: Dry season cropping

Table 3-26 Yield of Rice in South Sumatera Province(1980)

District	Lowland	Tidal	Flooded	Upland
Muba	2.2	2.3	2.3	1.1
Oki	2.6	2.2	2.9	1.5
Oku	3.9		2.3	1.3
Muara Emin	3.4		2.7	1.5
Lehat	4.7		-	2.2
Mora	4.6		2.5	2.0
Banga	1.5		-	0.8
Belitang	2.0		-	2.6
Average	3.9		2.8	1.5

(ton/ha)

Note: Estimated by the statistics of Department of Agriculture, South Sumatera

Table 3-27 Yield of Rice in Lampung Province

Type	Wet season (80/81)						Dry Season (81)					
	Intensification			Non-intensification			Intensification			Non-intensification		
	Area (ha)	Production (ton)	Yield (ton/ha)	Area (ha)	Production (ton)	Yield (ton/ha)	Area (ha)	Production (ton)	Yield (ton/ha)	Area (ha)	Production (ton)	Yield (ton/ha)
Lowland	74,165	294,345	3.97	44,375	91,412	2.06	19,500	77,415	3.97	11,560	23,320	2.0
Upland	20,460	46,774	2.28	101,810	199,339	1.95	-	-	-	-	-	-

Note: Estimated by the statistics of Department of Agriculture, Lampung

Table 3 - 28 Floor Price of Rice in Indonesia

Year	Rp/kg	
	Paddy	Milled rice
1974/75	41.8	68.5
1975/76	58.5	97.0
1976/77	68.5	108.0
1977/78	71.0	110.0
1978/79	75.0	119.5
1979/80	85-95	140-158
1980/81	105	175

Source: BULOG

Table 3 - 29 Balance of BULOG's rice

		1000 ton				
		1975/76	1976/77	1977/78	1978/79	1979/80
Opening inventory		783	536	579	459	709
Procurement	Domestic	539	410	404	881	364
	Import	667	1,506	2,308	1,268	2,643
	Total	1,989	2,452	3,291	2,592	3,717
Distribution	Officials	660	669	663	613	708
	Staffs of Public Services	90	87	82	106	91
	Market	559	979	2,021	1,053	2,033
	Others	101	84	50	82	25
	Total	1,410	1,819	2,786	1,854	2,856
Losses		43	54	45	46	42
Closed Inventory		536	579	459	709	817

Source: BULOG (National logistic Agency)

Table 3 - 30 Supply and Consumption of Paddy in Aceh Province
(1980/81)

District	Supply	Consumption			Total	Balance
		Seed	Edible	Buffer stock		
Aceh Besar	69,685	1,055	74,007	3,700	78,763	Δ 9,077
Sabang	412	14	5,717	286	6,017	Δ 5,605
Pidie	168,870	1,038	82,454	4,122	87,614	81,256
Aceh Utara	175,107	2,132	150,071	7,503	159,706	15,400
Aceh Tengah	28,790	605	39,201	1,960	41,766	Δ12,976
Aceh Timur	127,659	2,433	101,620	5,081	109,134	18,526
Aceh Tenggara	69,120	1,152	38,302	1,915	41,369	27,751
Aceh Barat	98,396	2,028	69,221	3,461	74,710	23,686
Aceh Selatan	74,152	1,158	66,110	3,305	70,573	3,578
Total	812,194	11,614	626,705	31,335	669,654	142,539

Δ ---- Minus

Source: Agricultural Service, Aceh Province

Table 3 - 31 : Farm Road for Rehabilitation and New Construction in 15 Provinces in Indonesia, 1979

Provinces	Rehabilitation		New Construction	
	km	%	km	%
Jawa Barat	302	5.2	177	3.9
Sumatera Utara	474	8.2	436	9.7
Sumatera Barat	731	12.6	449	9.9
Lampung	184	3.2	234	5.2
Aceh	51	0.9	-	-
Kalimantan Tengah	632	10.9	-	-
Kalimantan Barat	162	2.8	40	0.9
Sulawesi Selatan	682	11.8	333	7.4
Riau	277	4.8	42	0.9
Jambi	674	11.6	174	3.8
Sumatera Selatan	934	16.1	210	4.6
Sulawesi Utara	235	4.1	1,358	30.1
Sulawesi Tenggara	122	2.1	113	2.5
Nusa Tenggara Barat	272	4.7	282	6.2
Maluk	63	1.1	669	14.8
Total	5,795	100.0	4,517	100.0

Source: Satuan Pengendari Bimas, Jakarta, 1980

Table 4 - 1 Target and realized areas of Bimas, Inmas program (1978 - 80)
(Lampung Province)

Year	BIMAS		INMAS		Total		
	Target	realized	Target	realized	Target	realized	achievement ratio
1978	51,000	34,459	60,800	72,391	111,000	106,850	95.6 %
1979	47,000	38,254	73,000	90,800	121,000	129,054	107.5
1980	50,000	47,784	62,600	92,107	112,600	139,891	124.2

Table 4 - 2 Reclamation areas of Lowland and Irrigated areas

	Potential areas	Under construction areas	Final Target areas on the Development program	Development plan for 1988/89	residual Areas
Special Development program areas					
L. Utara	251,500	661	250,839	33,239	217,600
L. tengah	109,800	52,263	57,536	54,536	3,000
L. Selatan	19,574	13,936	5,578	5,578	-
Total	380,904	66,890	314,007	93,353	220,600
rehabilitation program areas					
L. utara	6,759	2,408	3,821	3,284	-
L. tengah	3,872	2,338	1,644	1,544	-
L. Selatan	7,488	6,162	1,326	1,216	-
Total	18,155	10,908	6,791	6,044	-
Construction of Simple irrigation areas					
L. utara	1,868	-	1,868	1,068	800
L. tengah	8,074	-	8,074	6,824	1,250
L. Selatan	2,344	-	2,349	2,239	100
Total	12,286	-	12,286	10,131	2,150
G. Total	411,345	77,798	333,048	109,528	222,750

Source: Agricultural Service in Provincial Government.

Table 4 - 3 Estimated improved seeds required by local government
(Aceh Province)

years	Improved Seeds (ton)		
	dry season	Wet season	total
1977	308	1436	1744
1978	457	1454	1911
1979	700	1761	2461
1980	341	2221	2562
1981*	500	2800	3300
1982*	600	3885	4485
1983*	650	3650	4300

* Target amounts

Table 4 - 4 Target amounts of E.S. required, estimated by local government
(Lampung Province)

years	E.S. Target amounts (ton)			
	dry season	wet season	in which upland paddy	Total
1982	569	6346	1428	6915
1983	569	6686	1640	7255
1984	600	7015	1800	7615
1985	625	7348	1920	7973
1986	675	7702	2120	8377
1987	725	8057	2280	8782
1988	800	8333	2520	9133

Table 4 - 5 Target Amount for E.S. in South Sumatera, estimated by local government (S. Sumatera Province)

Seed farm year	Target amounts (ton)				Total
	Belitang	Tugumulyo	Betung	ADC Lahat	
1981	1080	585	100	475	2240
1982	1125	625	100	650	2500
1983	1375	700	125	650	2850

Table 4 - 6 Existing seed farms constructed by government in the project area.

Name	District	Field Area (ha)		Remarks
		Total	for Rice seed	
<u>Aceh</u>				
Keumala BBI	Aceh Pidie	25.0	15.0	
Tangan Tangan BBU	" Selatan	11.5	1.0	
Pulo-ie BBP	" Barat	10.0	8.0	
Samahani BB	" Besar	6.75	6.0	
Beurawang BB	" Pidie	1.0	0.8	
Peureulak BB	" Timur	2.0	1.75	
Peudada BB	" Utara	1.25	1.0	
Total		56.0	33.55	
<u>South Sumatera</u>				
Belitang BBI	Ogan Komering Ulu	11.35	11.0	
Panau Rayam Raya BB	Lahat	14.5	11.0	
Sanjarsari BB	Musi Banyuasin	11.45	9.5	
Dewis BB	Ogan Komering Ilir	11.0	5.0	
Tani Mulyo BBU	Musi Rawas	9.2	7.5	
Rias BB	Bangka	23.7	10.0	Tidal
Delta Upang BBI	Musi Banyuasin	20.7	6.0	Upland
Betung BBU	Musi Banyuasin	28.9	4	
Total		130.6	64.0	
<u>Lampung</u>				
Pea. Tegineneng KBS	Lampung Selatan	40.0	5.0	
Kota Agung BB	"	12.0	2.0	
Negeri Sakti BB	"	4.8	4.0	
Metro BBU	Lampung Tengah	14.5	10.0	
Way Jepara BBI	"	10.0	9.0	
Way Seputih BB	"	5.0	4.0	
Ampera BB	"	7.0	4.0	
Srienantih BB	Lampung Utara	10.5	8.0	
Total		103.8	48.0	

Abrivation: KBS = Kebun Bibit Setasun = Agricultural extension service station

BBI = Balai Benih Induk = Central seed farm

BBU = Balai Benih Utama = Main seed farm

BB = Balai Benih = seed farm

BBP = Balai Benih Dan Pusat Latihan = Seed Farm and Agricultural Training Center

Table 4-7 Manual of Lowland Rice Cultivation
at Sang Hyang Seri Seed Farm

Work	Practical Items
Land preparation	<p>(Wet season)</p> <ol style="list-style-type: none"> 1. The first rotary cultivation about 21 days before transplanting. 2. The second rotary cultivation about 10 days before transplanting. 3. Puddling by Mud-Roller about 7 days before transplanting. 4. Watering with 10 - 15 cm depth in field. <p>(Dry season)</p> <ol style="list-style-type: none"> 5. Plowing: 2 times during October to November. 6. Puddling one time.
Nursery preparation (Nursery bed)	<ol style="list-style-type: none"> 1. Area 1/20 (5%) of area transplanted rice seedlings. 2. Seeds: 20 - 25 kg/ha. 3. Fertilizer: 100 kg Urea + 100 kg TSP; TSP is used before sowing. Urea is used for 10 days after sowing. 4. Insect control: 10 days after sowing by Diazinon/Sevin/Dursban. 5. For dry season crop, using Furadan 15 kg/ha for 1 - 2 days before transplanting controlled by Diazinon/Sevin. 6. Age of transplanting: 20 - 25 days

- Transplanting (Field)**
1. Transplanting by hand (Traditional).
 2. One seedling to a hole.
 3. Plant distance: 20 x 20cm for PB36 or varieties of 120 days, 25 x 25cm for varieties of 135 days i.e. Cimandiri, Cisadane, Barito etc.
- Weeding**
1. The first weeding: 4 days after transplanting, controlled by Agroxone 1.5 kg/ha in 200 ℓ of water.
 2. The second weeding: by hand 3 - 4 weeks after the first weeding.
 3. The third weeding: by hand, 7 - 8 weeks after the second weeding.
- Fertilizing**
1. Basic fertilizing: 100 kg TSP + 50 kg Urea on 5 - 6 days after transplanting.
 2. Top dress I : 75 - 100 kg Urea after the first weeding.
 3. Top dress II : 75 - 100 kg Urea before panicle initiation.
- Plant protection**
1. Rat control by baiting with Zinkfosfit (1 ℓ) and Clerat (5ℓ) mixed with grain or rice.
 2. Hunting rat day and night.
 3. Plant hopper control with Diazinon and Dursbanor Sevin.
 4. Stem borer control with Agrothion 1 ℓ/ha.
 5. Gallmage (usually infests in March) control with Furadan 3G, 15 kg/ha.
 6. Rice bug control with Sevin.

Roguing 1. During vegetative and generative stage,
In case more than 70% difference is observed.

Harvesting 1. Combine harvesting or traditional harvesting
by hand. (moisture content of grains 20 - 25%)

Table 4-8 Guidance on the Seed Production in D.I. Aceh

Item	Comment
Special attention for seed production	<ol style="list-style-type: none"> 1. Select fields which no the danger of contamination. 2. Use seeds of high quality with the genetic charactors of variety. 3. Use clean instruments to avoid seed contamination.
Land preparation	<ol style="list-style-type: none"> 1. Plow thoroughly and softly. 2. Weeding before plowing.
Seeding and planting	<ol style="list-style-type: none"> 1. Verify carefully the variety before sowing. 2. Transplant 1 seedling to a hole.
Control and Management	<ol style="list-style-type: none"> 1. Weeding thoroughly. 2. Protect insect pest and disease without delay. 3. Apply fertilizer. 4. Watering in field.
Roguing	<ol style="list-style-type: none"> 1. Pay attention to keep the purity of variety. 2. Take suitable distance (minimum 3m) from different variety. 3. Rogue (difference variety) 3 times at least during a growing time. 4. Roguing should be done 3 times at pre-earring, earing and pre-harvesting stage which characters of variety can be verified well

Harvesting and processing

1. Do not soak seeds in filthy water.
2. Clean equipment and seed processing place.

Storage

1. Do not put seeds on ground directly.
 2. Keep seeds in cool and dry place.
 3. Select the place to keep out from insect pest.
-

Table 4 - 9 C.S.F. & M.S.F. Existing Facilities
(Agricultural Machines & Seed Processing Facilities)

Province	Location	Power Tiller	Tractor & Implements	Mist Blower	Sprayer	Thresher	Dryer	Pre-Cleaner	Vacuum Cleaner	Ventilator	Electric Generator	Water Pump	Remark
Aceh	1 Keumala	1	-	-	-	-	3	2	1	2	-	1	
	2 Tengan-Tangan	-	2	1	3	-	3	4	-	-	-	1	
South Sumatera	3 Upang	1	1	1	5	-	1	-	1	2	-	1	
	4 Belitang	2	-	1	5	2	4	3	1	2	(7.5 HP)	1	
	5 Betung	2	1	1	5	1	2	2	-	-	-	1	
	6 Tugu-Mulyo	2	1	1	5	2	2	2	-	-	-	1	
	7 ADC Lahat	1	1	-	5	-	-	-	-	-	-	-	
Lampung	8 Way-Jepara	1	2	2	2	1	8	3	1	3	(12 HP)	1	1 Combine-Harvester
	9 Metro	2	1	1	5	1	3	2	-	-	(5 HPx2)	1	
	10 Tanjung-Iman	1	-	-	3	-	-	1	-	-	-	-	
Total		13	9	8	38	7	26	19	4	9	(29.5 HP)	6	

Note: Items supplied by GRANT are included

Table 4 - 10 C.S.F. & M.S.F. Required Facilities

Province	C.S.F., M.S.F.										Vehicles																		
	Dryer	Thresher	Sprayer	Tractor & Implements	Fire-cleaner	Receiving hopper	Width Separator	Gravity Separator	Length Separator	Scale-shooter	Sack Elevator	Belt Conveyor	Compressor	Generator	Control Box	Laboratory Equipment	Jeep	Mini-Bus	Motor Bike										
Aceh	2	2	6	4	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	-	1	2	1	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
South Sumatera	3	2	-	-	1	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	-	2	-	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	2	1	-	3	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	2	1	-	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	4	1	1	3	1	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	-	2	2	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	-	2	2	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
Lampung	4	2	-	1	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	-	2	2	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
	2	1	-	-	-	1	1	2	1	1	3	1	1	2	1	1	1	1	3										
Total											19	15	10	12	2	10	10	20	10	10	30	10	10	20	20	10	9	3	30

Note : 1. = 13-15 h.p. is capacitated for each tractor.
 2. = Trailer for the use of lowland paddy field, specially made wheel should be supplied, while the cultivators would be applied for upland use.
 3. = Ample amount of the spare parts shall be supplied.
 4. Sprayer : Mist-duster type.
 5. Dryer : Flat type, 1 ton in capacity.

Table 4 - 11 Results of Analysis of Paddy. (1/2)

No.	Variety	Date of Harvest	Date of Collection	Method of Processing	Form of Storage	Use	Location	Note
1	IR42	Aug. 81	Feb. 82	Traditional Sun-drying	Bag	For Seed	Keumara	
2	CISADANE	Aug. 81	Feb. 82	Traditional Sun-drying	Bag	For Seed	Keumara	
3	SEMERU	Aug. 81	Feb. 82	Traditional Sun-drying	Bag	For Seed	Keumara	Insect
4	Local	Feb. 82	Feb. 82	Traditional Sun-drying	--	For Consumption	Tapaktuan	
5	SEMERU	Feb. 82	Feb. 82	Stalk Drying-Storage Paddy-Sun-drying	--	For Consumption	Tangan-Tangan	no winnowing
6	SEMERU	Feb. 82	Feb. 82	Winnowed by Traditional Method	--	For Consumption	Tangan-Tangan	Same as No. 5
7	IR32	Feb. 82	Feb. 82	Shade-drying in the Hotel	--	For Seed	Tangan-Tangan	
8	PB5	Feb. 82	Feb. 82	Shade-drying in the Hotel	--	For Seed	Tangan-Tangan	
9	IR42	Feb. 82	Feb. 82	Shade-drying in the Hotel	--	For Consumption	Upang	
10	IR32	Feb. 82	Feb. 82	Shade-drying in the Hotel	--	For Seed	Upang	
11	100NIGHTS	Feb. 82	Feb. 82	Shade-drying in the Hotel	--	For Seed	Betung	Upland
12	IR36	81	Feb. 82	Traditional Sun-drying	Bag	For Seed	Tugu-Muryo	Insect
13	IR36	81	Feb. 82	Traditional Sun-drying	Timber Silo	For Seed	Tugu-Muryo	
14	Local	81	Feb. 82	Traditional Sun-drying	Timber Silo	For Seed	ADC Lahat	
15	SEMERU	Nov. 81	Feb. 82	Dryer Seed-cleaner	Timber Silo	For Seed	Belitang	Insect
16	SEMERU	Jan. 81	Feb. 82	Dryer Seed-cleaner	Timber Silo	For Seed	Belitang	Insect
17	PB38	Jan. 81	Feb. 82	Dryer Seed-cleaner	Timber Silo	For Seed	Belitang	Insect
18	CISADANE	Jan. 81	Feb. 82	Dryer Seed-cleaner	Timber Silo	For Seed	Belitang	Insect
19	ASAHAN	Jan. 79	Feb. 82	Dryer Seed-cleaner	Timber Silo	For Seed	Belitang	Long awned
20	IR36	Sept. 81	Feb. 82	Sun-drying Seed-cleaner	Timber Silo	For Seed	Belitang	
21	SEMERU	Dec. 81	Mar. 82	Traditional Sun-drying	Timber Silo	For Seed	Way-Jepara	
22	PB36	Oct. 81	Mar. 82	Traditional Sun-drying	Bag	For Seed	Metro	Insect
23	PB38	Nov. 81	Mar. 82	Traditional Sun-drying	Bag	For Seed	Metro	Insect
24	CISADANE	Feb. 82	Mar. 82	Seed processing Center	Steel Silo	For Seed	Sukamandi	Sang Hyang Seri

Table 4 - 11 Results of Analysis of Paddy (2/2)

Sample No.	Structure of Paddy Seed (%)										Capacity of Germination	Moisture Content (%)	Bulk Density (g/l)	Temperature of Paddy at the Sampling	Note
	Whole Seed	Oil Type	Paddy With long Pedicel	Immature Paddy	Abortive Paddy & Husk	Husked Rice	Impurities	Insect Damaged	Capacity of Germination						
									5 days	7 days					
1	69.5	9.5	3.7	15.3	0.9	0.8	0.3	-	-	47.3	78.5	12.1	552	28.8	
2	66.2	19.8	4.4	4.7	4.4	0.3	0.2	-	-	64.3	81.8	12.5	552	27.6	
3	82.0	6.3	1.7	8.2	0.1	0.2	0.4	1.1	1.1	68.2	81.5	12.2	562	28.0	
4	-	-	-	-	-	-	-	-	-	45.5	77.3	12.9	602	28.8	
5	80.4	2.1	0.3	14.9	1.7	-	0.6	-	-	62.5	100.00	12.2	556	31.5	
6	87.8	4.4	0.6	6.2	0.9	-	0.1	-	-	3.0	10.0	12.7	595	31.5	
7	83.6	4.2	0.1	12.0	-	0.04	0.06	-	-	35.0	97.5	15.1	592	-	
8	86.5	7.7	0.3	5.5	-	-	0.0	-	-	41.5	95.1	15.2	595	-	
9	84.2	1.9	-	12.6	1.1	-	0.2	-	-	25.0	75.0	15.2	541	-	
10	76.2	5.5	0.8	14.5	2.8	-	0.2	-	-	35.0	62.5	15.8	532	-	
11	-	-	-	-	-	-	-	-	-	44.2	59.8	-	-	-	
12	68.4	5.1	1.1	16.0	6.1	1.6	0.6	(6.1)	-	4.5	7.5	14.0	493	28.6	
13	69.9	8.1	-	17.2	4.8	-	0.0	-	-	0.0	0.0	13.9	529	26.2	
14	52.4	28.1	-	12.1	7.0	-	0.4	-	-	17.8	25.3	19.4	556	27.4	
15	68.9	12.1	0.4	16.4	-	0.7	0.1	1.4	1.4	39.0	79.3	14.6	559	26.3	
16	77.9	3.7	-	13.2	3.7	-	0.0	4.5	4.5	0.0	0.0	13.5	505	27.2	
17	89.2	3.2	-	5.8	0.9	0.0	0.5	0.9	0.9	51.0	75.0	12.6	568	26.5	
18	81.7	-	-	16.1	-	-	0.0	2.2	2.2	23.0	32.0	12.8	581	27.6	
19	70.6	-	21.4	7.0	0.5	-	-	0.5	0.5	0.0	0.0	12.9	556	28.2	
20	67.9	1.0	-	27.5	3.1	0.0	0.5	-	-	3.8	8.0	14.9	541	27.2	
21	71.9	5.0	-	20.0	18.8	1.2	-	-	-	24.0	83.4	-	562	26.8	
22	84.5	1.8	0.0	9.9	-	0.0	0.3	4.4	4.4	19.0	36.8	-	478	27.2	
23	56.0	-	-	36.7	-	-	0.3	3.3	3.3	0.0	0.0	-	463	26.9	
24	72.2	-	-	15.2	-	-	-	-	-	-	-	-	-	-	

Table 4 - 12 - 1 TEST RESULT OF PADDY SEED BBI BELITANG

SEED GROWER

No.	Date	Varieties	Seed Owner	Moisture content	Pure Seed	Other Crop Seed	Immature Seed	Periodical of time's cost (day)	Normal Seed	Abnormal Seed	Hard seed	Fresh grain	Died grain	Other variety Seed
1.	6-6-1981	Serayu	Kartini/BCC.	14.5	99.58	0.00	0.42	5-14 33.0	89.8	2.7	-	7.5	0.0	0.00
2.	6-9-1981	"	Seed Grower	14.5	99.77	0.00	2.23	5-14 41.8	87.3	3.2	-	9.5	0.0	0.22
3.	6-8-1981	"	"	14.3	99.11	0.00	0.89	5-14 58.0	86.3	1.7	-	12.0	0.0	0.00
4.	1-7-1981	D. Kindu	"	14.7	98.36	0.00	1.66	5-14 85.5	95.8	1.0	-	3.2	0.0	18.35
5.	1-7-1981	Seribu kali	"	14.9	95.03	0.00	4.97	5-14 75.3	96.3	1.0	-	2.7	0.0	2.47
6.	31-8-1981	PB. 32	Ikin Yowohangkun	11.9	99.52	0.00	0.68	5-7 31.5	65.3	6.7	-	28.0	0.0	0.12
7.	31-8-1981	PB. 36	Seed Grower	12.8	98.54	0.00	1.46	5-7 36.3	69.5	3.3	-	27.2	0.0	0.10
8.	2-9-1981	"	Amgari Pkg.	12.9	98.63	0.00	1.37	5-10 25.3	45.0	3.3	-	51.7	0.0	0.81
9.	27-10-1981	Lokal	CV. Bina Tani Pk.	16.1	98.56	0.00	1.41	5-14 7.0	13.3	2.0	-	84.7	0.0	3.34
10.	27-10-1981	Kemany	"	16.5	99.50	0.00	0.50	5-16 29.8	43.3	3.2	-	51.5	0.0	5.16
11.	2-11-1981	"	CV. Dimensi Pk.	15.7	97.56	0.00	2.44	5-10 67.0	83.3	0.5	-	16.2	0.0	10.45
12.	2-11-1981	Lokal	"	16.1	99.66	0.00	0.34	5-10 62.3	75.0	0.0	-	25.0	0.0	1.42
13.	2-11-1981	P1/2	"	16.9	98.92	0.00	1.08	5-10 28.3	56.3	3.2	-	40.5	0.0	7.86
14.	2-11-1981	"	"	16.7	95.19	0.00	4.81	5-10 34.5	56.0	3.0	-	41.0	0.0	0.46
15.	2-11-1981	P.1/1	"	14.5	99.59	0.00	0.41	5-10 68.5	86.3	5.7	-	8.0	0.0	1.27
16.	2-11-1981	"	"	15.7	96.67	0.00	3.33	5-10 72.3	91.8	4.7	-	3.5	0.0	5.98
17.	13-11-1981	PB.36	Seed Grower	-	-	-	-	5-14 30.5	46.5	4.0	-	49.5	0.0	-
18.	16-11-1981	Kanyut	"	16.6	96.01	0.00	3.99	5-10 28.5	45.7	5.3	-	49.0	0.0	3.54
19.	16-11-1981	Kuning	"	17.8	98.06	0.00	1.94	5-10 15.3	44.5	9.2	-	46.3	0.0	12.18
20.	16-11-1981	P.1/1	"	16.8	97.54	0.00	2.42	5-10 54.5	79.5	1.8	-	18.7	0.0	12.32
21.	16-11-1981	"	"	16.7	97.80	0.00	2.20	5-10 37.2	77.5	0.2	-	22.3	0.0	41.67
22.	27-12-1981	Kemany	"	14.0	-	-	-	5-10 79.2	84.3	8.7	-	7.0	0.0	-
23.	19-1-1982	Seribu kali	"	14.2	99.93	0.00	0.07	5-10 0.0	0.0	0.0	-	100.0	0.0	4.33
24.	19-1-1982	D. Kindu	"	13.4	99.89	0.00	0.11	5-10 23.3	59.0	16.5	-	24.5	0.0	6.32

Table 4 - 12 - 2 TEST RESULT OF PADDY SEED BBI BELITANG

No.	Date	Varietas	Seed Owner	Moisture content	Pure Seed	Other Crop Seed	Immature Seed	Periodical of time's test (day)	Normal Seed	Abnormal Seed	Hard Seed	Fresh Grain	Died grain	Other variety Seed
1.	20-1-1982	Semeru	BBI Belitang	13.3	99.66	0.00	0.54	5-10 46.0	87.2	4.0	-	8.8	0.0	0.00
2.	13-1-1982	Ciaedane	"	12.5	98.91	0.00	1.09	5-14 75.6	86.8	3.7	-	0.0	9.5	1.28
3.	15-1-1982	CH 167m	"	12.5	-	-	-	5-7 60.2	82.8	9.7	-	0.0	7.5	-
4.	25-5-1981	PB.36	"	12.8	99.21	0.00	0.79	5-14 61.0	90.0	6.5	-	3.5	0.0	0.33
5.	25-5-1981	"	"	12.8	99.10	0.00	0.90	5-14 48.3	91.8	5.5	-	2.7	0.0	0.61
6.	24-6-1981	Semeru	"	12.4	99.70	0.00	0.83	5-10 75.3	89.0	3.3	-	8.7	0.0	0.00
7.	24-6-1981	PB.42	"	12.3	99.66	0.00	0.34	5-10 89.0	93.5	3.3	-	5.2	0.0	0.28
8.	2-7-1981	Cinandiri	"	11.5	99.13	0.00	0.87	5-14 63.0	76.3	10.5	-	13.2	0.0	1.50
9.	2-7-1981	Semeru	"	12.0	98.59	0.00	1.41	5-10 81.3	87.5	8.5	-	4.0	0.0	0.24
10.	2-7-1981	PB.36	"	11.9	97.18	0.00	2.83	5-10 50.5	63.0	12.0	-	25.0	0.0	0.47
11.	2-7-1981	"	"	11.9	93.92	0.00	4.08	5-10 63.5	71.3	6.2	-	13.0	0.0	0.59
12.	4-7-1981	PB.32	"	13.1	96.74	0.00	3.26	5-14 35.8	57.3	6.2	-	36.5	0.0	0.00
13.	4-7-1981	Semeru	"	12.6	94.92	0.00	3.08	5-14 61.8	80.0	6.2	-	13.5	0.0	0.23
14.	14-7-1981	PB.42	"	12.3	99.66	0.00	0.34	5-10 65.5	91.5	3.5	-	5.2	0.0	0.28
15.	14-7-1981	"	"	12.0	99.64	0.00	0.36	5-10 72.8	94.5	2.5	-	3.0	0.0	0.09
16.	24-9-1981	PB.36	"	14.5	95.96	0.00	4.04	5-14 46.3	60.0	1.0	-	39.0	0.0	0.09
17.	24-9-1981	"	"	14.7	96.72	0.00	3.28	5-14 45.8	57.8	2.2	-	40.0	0.0	0.38
18.	24-9-1981	"	"	14.5	95.96	0.00	4.04	5-14 46.2	60.0	1.0	-	0.0	39.0	0.00
19.	4-10-1981	"	"	14.7	98.56	0.00	1.44	5-14 43.0	73.5	2.3	-	0.0	24.2	0.15
20.	4-10-1981	"	"	14.5	97.78	0.00	2.22	5-14 40.0	56.0	2.3	-	0.0	41.7	3.34
21.	13-10-1981	PB.42	"	13.3	96.56	0.00	3.64	5-14 76.5	83.0	13.0	-	0.0	4.0	0.00
22.	13-10-1981	PB.36	"	13.1	99.18	0.00	0.82	5-14 87.3	95.8	1.2	-	0.0	3.0	0.34
23.	12-12-1981	Semeru	"	12.6	99.50	0.00	0.50	5-7 87.5	91.8	4.5	-	0.0	3.7	0.09
24.	12-12-1981	Ciaedane	"	12.7	99.20	0.00	0.80	5-7 60.5	62.5	10.0	-	0.0	27.5	0.40
25.	12-12-1981	"	"	12.6	98.67	0.00	1.33	5-7 58.0	80.2	7.8	-	0.0	12.0	1.28

Table 4 - 13 PRESENT SITUATION AND PLAN FOR BUILDING CONSTRUCTION

(1) KEUMALA C.S.F., ACEH PROVINCE

Buildings Type	Requirement			Present Facilities			Present Condition			Construction Plan		
	Capacity (Persons)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Mixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office		1		104	1		104	A	C			0
Garage		1		147	1		147	"	"			0
Seed Storage		1		183	1		183	B	"			0
Warehouse		1		123	1		123	A	"			0
Warehouse		1		53	1		53	"	"			0
Guard Hostel		1		16	1		16	"	"			0
Guard Men's Houses		1		42	1		42	"	"			0
Senior Staffs' Houses	3	3	70	210	3	55	165	"	"			0
Junior Staffs' Houses	3	3	50	150	3	42	209	"	"			0
Meeting House		1		102	1		102	"	"			0
Laboratory		1		42	1		42	"	"			0
Assistant Staffs' Houses	4	4	36	144	2	186	371	"	"			0
Car Shed		1		53	1		53	"	"			0
Drying Floor		(1)		(310)			(310)	"	"			0
Training Center	30	1		70					A	(1)	1	70
Generator Room		1		15					"	(1)	1	15
Guest House	2	1		100					"	(1)	1	100
Work Shop (S.P.U.)		1		300					"	(1)	1	300
	42	23		1,456	20		1,310			4		485

A: In Good Condition
 B: Minor Repair Required
 C: Major Repair Required
 O: Irreparable, Reconstruction Required

(2) TANGAN-TANGAN, M.S.F., ACEH PROVINCE

Building Type	Capacity (Persons)	Requirement			Present Facilities			Present Condition			Construction Plan		
		Number of buildings	Floor Space (m ²)	Total Area (m ²)	Number of buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	
Office		1		359	1		359	C	C			0	
Seed Storage Room		1		126	1		126	B	"			0	
Garage		(1)		(325)			(325)	D	"			0	
Seed Storage		1		36	1		36	A	"			0	
Drying Floor		1		115	1		115	"	"			0	
Warehouse		3	70	210	1		63	"	"	II 2	70	140	
Meeting House	2			50				"	"	II 1		50	
Senior Staffs' Houses	2			108	1		19	"	"	III 2	36	72	
Junior Staffs' Houses	3		36	10				"	"	III 1		10	
Assistant Staffs' Houses													
Generator Room		1		10	1		10	"	"				
	7	12		1,014	7		726			6		272	

AI In Good Condition
 B1 Minor Repair Required
 C1 Major Repair Required
 D1 Irreparable. Reconstruction Required

(3) UPANG C.S.F. SOUTH SUMATERA PROVINCE

Buildings Type	Requirement			Present Facilities			Present Condition			Construction Plan		
	Capacity (Persons)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office		1		75	1		75	B	D			0
Seed Storage		1		96	1		96	"	"			0
Warehouse		1		56	1		56	"	"			0
Boat Motel		1		59	1		59	A	"			0
Wharf		1		51	1		51	B	"			0
Green House		1		41	1		41	A	"			0
Pump Motel		1		18	1		18	B	"			0
Senior Staffs' Houses	3	3	70	210	2	76 + 55	129	"	"			0
Junior Staffs' Houses	3	3	50	150	4	135	135	"	"			0
Assistant Staffs' Houses	4	4	36	144	1		101	"	"			0
Guest House	2	2	100	200							100	200
Training Center		1	70	70								70
Dormitory		1		147								147
Meeting House	30	1		50								50
Garage		1		100								100
Laboratory		1		50								50
Car Shed		1		30								30
Work Shop		1		300								300
	62	25		1,867	14		761			9		947

A: In Good condition
 B: Minor Repair Required
 C: Major Repair Required
 D: Irreparable, Reconstruction Required

(4) BELITANG C.S.F., SOUTH SUMATERA PROVINCE

Building Type	Requirement		Present Facilities		Present Condition		Construction Plan			
	Capacity (Persons)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office		1		560		1	560	B		0
Laboratory		1		230		1	230	"		0
Garage		2		567		2	567	"		0
Seed Storage		1		283		1	283	"		0
Drying Floor		(1)		(576)		1	(576)	"		0
Warehouse		1		379		1	379	"		0
Generator Room		1		21		1	21	"		0
Gar Shed		1		50		1	50	"		0
Senior Staffs' Houses	3	1		126		1	126	"		0
Senior Staffs' Houses	3	1		220		1	220	"		0
T. Senior Staffs' Houses	5	1		213		1	213	"		0
Dormitory	100	1		1,298		1	1,298	"		0
Assistant Staffs' Houses	4	13		762		13	762	"		0
Guest House	8	1		407		1	407	"		0
Pump House		1		5		1	5	"		0
Cow House		1		60		1	60	"		0
Work Shop		1		300		1	300	"		300
	123	30		5,501		29	5,201			300

A: In Good Condition

B: Minor Repair Required

C: Major Repair Required

D: Irreparable, Reconstruction Required

(5) BETUNG M.S.F., SOUTH SUMATERA PROVINCE

Buildings Type	Capacity (Persons)	Requirement			Present Facilities			Present Condition			Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	
Office		1		63	1		63	A	C			0	
Garage		1		53	1		53	"	"			0	
Seed Storage		1		155	1		155	"	"			0	
Drying Floor		(1)		329			(329)	"	"			0	
Warehouse		1		257	1		257	"	"			0	
Generator Room		1		10	1		10	"	"			0	
Training Room		1		112	1		112	"	"			0	
Senior Staffs' Houses	2	2	70	140						II 2		140	
Junior Staffs' Houses	2	2	50	100	1		46	"	"	II 1		50	
Assistant Staffs' Houses	3	3	36	108	1		252	"	"	III 1		30	
Car Shed		1		30									
	7	14		1,028	8		948			4		220	

A: In Good Condition

B: Minor Repair Required

C: Major Repair Required

D: Irreparable, Reconstruction Required

(6) ADC. LABAT M.S.F., SOUTH SUMATERA PROVINCE

Building's Type	Requirement		Present Facilities			Present Condition			Construction Plan			
	Capacity (Person)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office } Garage }		1		147	1		147	A	C			0
Seed Storage		2	(98.01)	251	2		251	"	"			0
Drying Floor		(2)	(152.5)	142	2		(342)	"	"			0
Car Shed		1		54	1		54	"	"			0
Generator Room		1		7	1		7	"	"			0
Training Room		1		47	1		47	"	"			0
T. Senior Staffs' Houses		1		47	1		47	"	"			0
Senior Staffs' Houses	2	2	70	140	2	83	146	"	"			0
Junior Staffs' Houses	2	2	50	100						(11)	2	100
Assistant Staffs' Houses	3	3	36	108	2	112	224	"	"	(11)	1	0
Car Shed		1		30						(11)	1	30
	7	17		931	13		943			3		130

A: In Good Condition

B: Minor Repair Required

C: Major Repair Required

D: Irreparable, Reconstruction Required

(7) TUGUMULYO M.S.F., SOUTH SUMATERA PROVINCE

Building Type	Capacity (Persons)	Requirement			Present Facilities			Present Condition			Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	
Office		1		292	1		0					0	
Seed Storage		1		101	1		"					0	
Garage		(1)		400	1		"					0	
Car Shed		1		16	1		"					0	
Seed Storage				156	1		A					0	
Drying Floor				156	1		"					0	
Ware House				294	1		"					0	
Garage		2	70	140	1		B			(II) 1		70	
Seed Storage		2	50	100	1		A					0	
Drying Floor		3	36	108	1		B			(III) 2	36	72	
Senior Staffs' Houses	2												
Junior Staffs' Houses	2												
Assistant Staffs' Houses	3												
	7	14		1,059	10							142	

- A1 In Good Condition
- B1 Minor Repair Required
- C1 Major Repair Required
- D1 Irreparable, Reconstruction Required

(8) WAY JERARA C.S.F., LAMPUNG PROVINCE

Building Type	Requirement			Present Facility			Present Condition			Construction Plan		
	Capacity (Person)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office		1		84	1		84	A	A			0
Laboratory		1		16	1		16	"	"			0
Garage		1		75	1		75	"	"			0
Meeting House		1		80	1		80	"	"			0
Seed Storage		1		120	1		120	"	"			0
Drying Floor		(1)		(300)	1		(300)	"	"			0
Warehouses		2		61	2		61	"	"			0
Generator Room		1		20	1		20	"	"			0
Car Shed		1		20	1		20	"	"			0
Tractor Shed		1		120	1		120	"	"			0
Senior Staffs' Houses	3	3	57	171	3	57	171	"	"			0
Assistant Staffs' Houses	4	3	26	78	3	26	78	"	"			0
Guard House		1		9	1		9	"	"			0
Training Center		1		70	1		70			II 1		70
Dormitory	30	1		147	1		147			III 1		147
Work Shop		1		300	1		300			II 1		300
(Junior Staffs' Houses)	(3)											
	40	21		1,371	38		854					517

A: In Good Condition

B: Minor Repair Required

C: Major Repair Required

D: Irreparable, Reconstruction Required

(9) METRO M.S.F., LAMPUNG PROVINCE

Buildings Type	Capacity (Persons)	Requirement			Present Facilities			Present Condition			Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	
Office		1		247	1		247	D	D			0	
Seed Storage		1		113	1		113	C	"			0	
Garage		(1)		(521)	1		(521)	D	"			0	
Drying Floor		2	70	140						(II) 2		140	
Junior Staffs' Houses	2												
Senior Staffs' Houses		3	53	160	3		160	B	"			0	
Assistant Staffs' Houses	3				2		75	"	"	(III) 1		36	
Seed Storage		1		100						(II) 1		100	
Office		1		30						(II) 1		30	
Car Shed		1		30						(III) 1		30	
Generator Room		1		10						(III) 1		10	
	7	15		934	8		595			7		346	

- A) In Good Condition
- B) Minor Repair Required
- C) Major Repair Required
- D) Irreparable, Reconstruction Required

(10) TANJUNG IMAN M.S.F., ACEH PROVINCE

Building Type	Capacity (Personn)	Requirement			Present Facilities			Present Condition		Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Number of Buildings	Floor Space (m ²)	Total Area (m ²)	Buildings	Fixtures	Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Office		1		110	1		110	B	D			0
Garage												0
Seed Storage		1		92	1		92	"	"			0
Senior Staffs' Houses	2	2	70	140	1		69	"	"	II	1	70
Junior Staffs' Houses	2	2	50	100						II	2	100
Assistant Staffs' Houses	3	3	36	108						III	3	108
Car Shed		1		30						III	1	30
Generator Room		1		10						III	1	10
	7	11		590	3		271				8	318

- A: In Good Condition
- B: Minor Repair Required
- C: Major Repair Required
- D: Irreparable, Reconstruction Required

Table 4 -14 Hydraulic Calculation Table

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (o/oo)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
M-1 P	0	0	5.0								
1	145	145	6.0	58.2	200	1.85	13.223	1.92	58.88	53.88	
2	98	243	9.5	"	"	"	"	1.30	56.96	50.96	
3	145	388	11.5	"	"	"	"	1.92	55.66	46.16	
4	28	416	10.5	"	"	"	"	0.37	53.74	42.24	
									53.37	42.87	M-2 Diverging Point
5	107	523	14.2	"	"	"	"	1.41	51.96	37.76	M-3 Diverging Point
6	108	631	17.6	51.9	200	1.65	10.697	1.16	50.80	33.20	M-6 M-7 Diverging Point
7	109	740	17.7	"	"	"	"	1.17	49.63	31.93	M-8 Diverging Point
8	64	804	16.2	"	"	"	"	0.68	48.95	32.75	
								5-9.93			
M-2 4	0	0	10.5								
9	84	84	17.2	17.7	150	1.00	6.743	0.57	53.37	42.87	
M-3 5	0	0	14.2								
10	53	53	12.5	48.1	200	1.53	9.294	0.49	51.96	37.76	
11	55	108	9.3	"	"	"	"	0.51	51.47	38.97	
									50.96	41.66	M-4 Diverging Point
12	53	161	11.5	38.4	200	1.22	6.127	0.32	50.64	39.14	
13	54	215	13.2	"	"	"	"	0.33	50.31	37.11	M-5 Diverging Point

(1) BRTUNG

(Continue)

(2) BTUNG

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge ($\frac{L}{s}$)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient ($\frac{g}{100}$)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
14	163	378	8.5	17.7	150	1.00	6.743	1.10	49.21	40.71	
M-4								$\Sigma=2.75$			
11	0	0	9.3						50.96	41.66	
15	178	178	10.3	43.9	200	1.40	7.848	1.40	49.56	39.26	
M-5											
13	0	0	13.2						50.31	37.11	
16	58	58	12.3	20.7	150	1.17	9.008	0.52	49.79	37.69	
M-6											
6	0	0	17.6						50.80	33.20	
17	52	52	17.0	33.7	200	1.07	4.812	0.25	50.55	33.55	
18	95	147	16.0	21.9	150	1.24	9.998	0.95	49.60	33.60	
19	3	150	"	20.7	"	1.17	9.008	0.03	49.57	33.57	
20	77	227	19.8	6.3	100	0.80	7.185	0.55	49.02	29.22	
M-7								$\Sigma=1.78$			
6	0	0	17.6						50.80	33.20	
21	52	52	14.0	35.4	200	1.13	5.271	0.27	50.53	36.53	
22	55	107	10.0	15.2	100	1.94	36.650	2.02	48.51	38.51	
M-8											
7	0	0	17.7						49.63	31.93	
22	278	278	15.1	36.3	200	1.16	5.521	1.53	48.10	33.00	

(Continue)

(3) RRTUNG

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (c/oo)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
1(8)	0	0	16.2								
2	6	6	"	30.8	150	1.74	18.790	0.11	48.95	32.75	
3	8	14	16.5	18.1	125	1.47	17.077	0.14	48.84	32.64	
4	15	29	17.1	13.5	100	1.72	29.429	0.44	48.70	32.20	
5	15	44	17.5	8.9	"	1.13	13.616	0.20	48.26	31.16	
6	18	62	"	4.2	75	0.95	13.776	0.25	48.06	30.56	
7	17	79	18.0	3.8	"	0.86	11.448	0.19	47.81	30.31	
8	17	96	"	3.4	"	0.77	9.319	0.16	47.46	29.46	
9	17	113	"	3.0	"	0.68	7.392	0.13	47.33	29.33	
10	17	130	"	2.5	50	1.27	38.008	0.65	46.68	28.68	
11	17	147	"	2.1	"	1.07	27.529	0.47	46.21	28.21	
12	17	164	18.5	1.7	40	1.35	55.203	0.94	45.27	26.77	
13	17	181	"	1.3	"	1.03	33.607	0.57	44.70	26.20	
14	17	198	"	0.8	30	1.13	55.565	0.94	43.76	25.26	
15	17	215	"	0.4	"	0.57	15.413	0.26	43.50	25.00	18.5+25.0
								Z=5.45			

Table 4 - 15 Hydraulic Calculation Table

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (o/oo)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
M-1	0	0	75.0								
P	190	190	109.5	35.4	200	1.13	5.271	1.00	164.24	89.24	
1	62	252	111.6	30.4	"	0.97	3.977	0.25	163.24	53.74	
2	25	277	112.0	27.8	150	1.57	15.545	0.39	162.99	51.39	
3	138	415	114.0	"	"	"	"	2.15	162.60	50.60	
4	49	464	"	"	"	"	"	0.76	160.45	46.45	
5	57	521	113.6	17.7	125	1.44	16.386	0.93	159.69	45.69	
6	107	628	112.0	"	"	"	"	1.75	158.76	45.16	
7	139	767	113.5	"	"	"	"	2.28	157.01	45.01	
8	106	873	118.5	"	"	"	"	1.74	154.73	41.23	
9								Σ=11.25	152.99	34.49	
M-2	0	0	109.5								
1	136	136	106.5	35.4	200	1.13	5.271	0.72	163.24	53.74	
10	13	149	"	"	"	"	"	0.07	162.52	56.02	
11	161	310	102.8	"	"	"	"	0.85	162.45	55.95	
12	104	414	101.4	15.2	100	1.94	36.650	3.81	161.60	58.80	
M-3	0	0	106.5								
11	76	76	103.0	24.5	150	1.39	12.304	0.94	162.45	55.95	
14	0	0	111.6						161.51	58.51	
M-4	0	0	109.0								
2	90	90	111.6	30.4	200	0.97	3.977	0.36	162.99	51.39	
15	0	0	114.0						162.63	53.63	
M-5	0	0	114.0								
5	90	90	110.5	27.8	150	1.57	15.545	1.40	159.69	45.69	
16									158.29	47.79	

(Continue)

(2) ADC LAHAT

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (o/oo)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
1(9)	0	0	118.5						152.99	34.49	
2	13	13	"	17.7	125	1.44	16.386	0.21	152.78	34.28	
3	15	28	120.0	7.6	75	1.72	41.269	0.62	152.16	32.16	
4	15	43	120.8	5.1	"	1.15	19.730	0.30	151.86	31.06	
5	18	61	122.0	2.5	50	1.27	38.008	0.68	151.18	29.18	
6	17	78	122.5	2.1	"	1.07	27.529	0.47	150.71	28.21	
7	17	95	122.8	1.7	40	1.35	55.203	0.94	149.77	26.97	
8	17	112	123.0	1.3	"	1.03	33.607	0.57	149.20	26.20	
9	17	129	"	0.8	30	1.13	55.565	0.94	148.26	25.26	
10	17	146	"	0.4	"	0.57	15.413	0.26	148.00	25.00	123.0+25.0
								Σ=4.99			

Table 4 - 16 Hydraulic Calculation Table

(D) TANJUNG IMAN

Station	Distance (m)	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (e/100)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
M-1 P	0	0	96.20	27.4	150	1.55	15.133	1.74	136.09	39.89	
1	115	115	98.30	"	"	"	"	1.24	134.35	36.05	M-2 Diverging Point
2	82	197	99.04	"	"	"	"	2.77	133.11	34.07	M-3 M-4 Diverging Point
3	183	380	99.32	"	"	"	"	1.51	130.34	31.02	M-5 Diverging Point
4	100	480	98.51	"	"	"	"	Σ=7.26	128.83	30.32	
M-2 1	0	0	98.30	4.2	75	0.95	13.776	2.36	134.35	36.05	
5	171	171	"	"	"	"	"	"	131.99	33.69	
M-3 2	0	0	99.04	22.8	150	1.29	10.772	0.84	133.11	34.07	
6	78	78	99.35	"	"	"	"	"	132.27	32.92	
M-4 2	0	0	99.04	19.4	"	1.10	7.990	0.45	133.11	34.07	
7	56	56	98.40	"	"	"	"	"	132.66	34.26	
M-5 3	0	0	99.32	23.2	"	1.31	11.124	0.95	130.34	31.02	
8	85	85	99.62	"	"	"	"	"	129.39	29.77	

(Continue)

(2) TANJUNG IMAN

Station	Distance m	Accumulated Distance (m)	Base Elevation (m)	Discharge (l/s)	Pipe Bore (mm)	Velocity (m/s)	Hydraulic Gradient (o/oo)	Head Loss (m)	Dynamic Water Level (m)	Dynamic Water Pressure (m)	Remarks
1(4)	0	0	98.51						128.83	30.32	
2	8	8	"	27.4	150	1.55	15.133	0.12	128.71	30.20	
3	15	23	"	12.7	100	1.62	26.285	0.39	128.32	29.81	
4	15	38	99.80	10.5	"	1.34	18.487	0.28	128.04	28.24	
5	15	53	"	8.4	"	1.07	12.234	0.18	127.06	28.06	
6	15	68	"	6.3	75	1.43	29.167	0.44	127.42	27.62	
7	15	83	"	4.2	"	0.95	13.776	0.21	127.21	27.41	
8	18	101	99.30	2.1	50	1.07	27.529	0.50	126.71	27.41	
9	17	118	"	1.7	40	1.35	55.203	0.94	125.77	26.47	
10	17	135	"	1.3	"	1.03	33.607	0.57	125.20	25.90	
11	17	152	99.20	0.8	30	1.13	55.565	0.94	124.26	25.06	
12	17	169	99.00	0.4	"	0.57	15.413	0.26	124.00	25.00	99.0+25.0
							$\Sigma=4.83$				
1(8)	0	0	99.62						129.39	29.77	
2	8	8	99.62	23.2	150	1.31	11.124	0.09	129.30	29.68	
3	15	23	"	10.5	100	1.34	18.487	0.28	129.02	29.40	
4	15	38	99.50	8.4	"	1.07	12.234	0.18	128.84	29.34	
5	15	53	"	6.3	75	1.43	29.167	0.44	128.40	28.90	
6	15	68	"	4.2	"	0.95	13.776	0.21	128.19	28.69	
7	18	86	"	2.1	50	1.07	27.529	0.50	127.69	28.19	
8	17	103	"	1.7	40	1.35	55.203	0.94	126.75	27.25	
9	17	120	"	1.3	"	1.03	33.607	0.57	126.18	26.68	
10	17	137	99.63	0.8	30	1.13	55.565	0.94	125.24	25.61	
11	17	154	"	0.4	"	0.57	15.413	0.26	124.98	25.35	
							$\Sigma=4.41$				

Table 4 - 17 Receiving Capacity per Day

Province	Location	Receiving Capacity per Day		
		Average (Ton / Day)	Inclusive of 20% Variation (Ton / Day)	Maximum (Ton / Day)
ACEH	1 Pulo-Ie	13.2	15	20
	2 Tangan-Tangan	10.2	13	20
	3 Meureudu	19.9	24	30
	4 Syantallira A	42.4	51	50
S. SUMATRA	5 Upang	20.6	25	30
	6 Betung	22.7	28	30
	7 ADC Lahat	19.6	24	30
	8 Tugu-Mulyo	8.7	11	10
LAMPUNG	9 Wonodadi	12.2	15	20
	10 Karang-Endah	12.2	15	20
	11 Tanjung-Iman	37.7	46	50

- a) Ave. amount of the daily receiving is calculated by the following formula;

$$\text{Ave. amount} = \frac{B}{45 \text{ (No. of days required for Processing)}}$$

Where,

- B = Quantity of low paddy processed for the rainy season crop
- b) Daily amount of the receiving including fluctuation rate;
 Due to road and weather condition, daily amount of the paddy received by the receiving stations is different to each other. Accordingly, for the determination of the drying capacity, 20% of the fluctuation rate is applied.
- c) Maximum amount of the paddy receiving;
 It has been decided on the basis of drying capacity.

Table 4 - 18 Required Number and Capacity of Each Process of SPC

Province	Location	Trucks (5 ton)	Receiving Facilities (ton/Hr)	In-Bin-Dryer (each 10 ton)	Silo		Seed Cleaning & Grading Facilities (ton/Hr)
					50 ton	25 ton	
Aceh	1 Pulo-Ie	1	5	2	8	4	1
	2 Tangan-Tangan	1	5	2	6	4	1
	3 Meureudu	2	10	3	14	4	3
	4 Syamtalira (A)	3	20	5	26	4	3
South Sumatera	5 Upang	by Junk	10	3	14	4	3
	6 Betung	2	10	3	14	4	3
	7 ADC Lahat	2	10	3	10	4	3
	8 Tugr-Mulyo	1	5	1	6	4	1
Lampung	9 Wonodadi	1	5	2	10	4	1
	10 Karang Erdah	1	5	2	10	4	1
	11 Tanjung Iman	3	20	5	26	4	3

Table 4-19 Real Working Days of Year and Running Costs of S.P.C.

Location	Real Working Days/year					Running Cost (x Rp 1,000)				Running Cost Per year Rp 3,400
	Receiving (Days)	Cleaning (Days)	Reserve (Days)	Total (Days)	Dryer	Generator		Seed Cleaning & Reserve Days		
						Receiving & Drying	Receiving & Drying			
1 Pulo-ic	45	62	60	167	Rp 1,044	Rp 1,231	Rp 1,125			
2 Tangan-Tangan	45	52	60	157	1,044	1,231	1,033		3,308	
3 Meureudu	45	34	60	139	1,566	1,231	867		3,664	
4 Syamtalira(A)	45	71	60	176	2,727	2,106	1,735		6,568	
5 Upang	45	35	60	140	1,566	1,231	886		3,683	
6 Betung	45	38	60	143	1,566	1,231	904		3,701	
7 ADC Lahat	45	33	60	138	1,566	1,231	858		3,655	
8 Tung-Mulyo	90	88	60	238	2,088	2,462	1,364		5,914	
9 Wonodadi	90	124	60	274	2,088	2,462	1,696		6,246	
10 Karang-Endah	90	124	60	274	2,088	2,462	1,696		6,246	
11 Tanjung-Iman	45	63	60	168	2,727	2,106	1,629		6,462	

Table 4 - 20 Generator Capacity

1 Pulo-fe	30 KVA x 3
2 Tangan-Tangan	30 KVA x 3
3 Meureudu	30 KVA x 3
4 Syantalira (A)	44 KVA x 3
5 Upang	30 KVA x 3
6 Betung	30 KVA x 3
7 ADC Lahat	30 KVA x 3
8 Tugu-Mulyo	30 KVA x 3
9 Konodadi	30 KVA x 3
10 Karang-Endah	30 KVA x 3
11 Tanjung-Iman	44 KVA x 3

Table 4 -21 Areas of Seed Warehouse

	Location	1st Fl.	2nd Fl.
1	Pulo-ic	208 m ²	144 m ²
2	Tangan-Tangan	208 m ²	144 m ²
3	Heureudu	208 m ²	144 m ²
4	Syantaira (A)	288 m ²	192 m ²
5	Upang	208 m ²	144 m ²
6	Betung	208 m ²	144 m ²
7	ADC Lahat	208 m ²	144 m ²
8	Tugu-Mulyo	208 m ²	144 m ²
9	Wonodadi	208 m ²	144 m ²
10	Karang-Endah	208 m ²	144 m ²
11	Tanjung-Iman	228 m ²	192 m ²

Table 4-22 Investment Cost of C.S.C.S. & M.S.S.V.

Province	Location	Local				Total	Foreign				Sub Total	Contingency	Total
		Reclamation of the paddy field & housing	Structure & Building	Equipment & Facilities	*2		Reclamation of the paddy field & housing	Structure & Building	Equipment & Facilities	Vehicle			
ACER	(1) Kumala	326,675	75,600	6,708	408,783	449,661	226,498	0	133,498	359,996	35,999	395,995	
	(2) Tangen-Tangen	68,699	36,325	4,997	112,021	123,223	35,749	0	98,309	134,058	13,405	147,463	
	Sub Total	(395,374)	(111,925)	(11,705)	(520,804)	(572,884)	(262,247)	0	(231,807)	(494,054)	(49,404)	(543,458)	
S. SUMATRA	(3) Upang	52,179	131,656	2,969	186,804	203,484	28,236	0	88,957	117,193	11,719	128,912	
	(4) Belitang	69,192	37,799	2,764	109,755	120,730	36,330	0	106,626	142,956	14,295	157,251	
	(5) Betung	226,583	26,932	3,909	257,424	283,166	233,303	0	114,429	347,762	34,776	382,538	
	(6) ADC Lahat	103,674	15,592	2,736	122,002	134,202	121,238	0	95,664	216,922	21,692	238,614	
	(7) Tugumuly	76,056	17,043	4,133	97,232	106,953	40,763	0	118,176	158,941	15,894	174,835	
	Sub Total	(527,684)	(229,022)	(16,511)	(773,217)	(850,537)	(459,922)	0	(523,832)	(983,774)	(98,376)	(1,082,150)	
	Total	(1,143,682)	(300,909)	(33,646)	(1,478,237)	(1,678,826)	(880,856)	0	(1,070,248)	(1,951,104)	(195,106)	(2,146,210)	
LAMPUNG	(8) Way-Jepara	53,102	69,824	1,997	124,923	137,415	28,967	0	113,318	144,285	14,428	158,713	
	(9) Metro	106,171	47,649	1,918	155,738	171,333	58,804	0	95,893	154,697	15,469	170,166	
	(10) Tanjung Inan	61,551	40,329	1,513	103,393	113,932	70,916	0	103,378	174,294	17,429	191,723	
Sub Total	(220,826)	(158,022)	(5,428)	(384,276)	(422,700)	(158,687)	0	(314,599)	(473,276)	(47,326)	(520,602)		
Total	(1,143,682)	(300,909)	(33,646)	(1,478,237)	(1,678,826)	(880,856)	0	(1,070,248)	(1,951,104)	(195,106)	(2,146,210)		

*1 Costs of staff house, dormitory, seed processing center, warehouse, and their vacillation and erection charges.

*2 a. Transportation charge from Jakarta to site.
b. Costs of Indonesian made extermination test instruments.

c. Erection charge: Central and Main S.P. is responsible for erection of machinery, while wiring of electrical facilities is done by electrical engineer.

*3 Including agricultural equipment, and machinery of seed processing, electrical, laboratory instrument spare parts and vehicle.

Note: a. Costs of S.C.C.S. is not include.
b. Investment costs of S.C.C.S. (X Rp 1,000) are consisting of:

Local	Rp 2,916
Foreign	Rp 21,600
Contingency	Rp 2,451
Total	Rp 26,967

Table 4 - 23 Recurrent Costs of C.S.F. & M.S.F.

(Rp. 1,000/year)

Province	Location	Staff Cost	Seed Production Cost	Running Costs (Equipment Facilities Laboratory Vehicle)	Total
Aceh	1. Keumala	2,893	4,701	6,052	13,646
	2. Tangan-Tangan	5,667	2,797	3,873	12,337
	(Sub Total)	(8,560)	(7,498)	(9,925)	(25,983)
	3. Upang	5,209	1,643	3,903	10,755
	4. Belitang	1,612	2,394	5,736	9,742
	5. Serung	2,398	4,768	4,266	11,432
	6. ADC Lahat	6,450	4,087	4,177	14,714
S. Sumatera	7. Tugu-Mulyo	1,104	1,055	3,734	5,893
	(Sub Total)	(16,773)	(13,947)	(21,816)	(52,536)
Lampung	8. Way-Jepara	6,604	3,980	5,766	16,350
	9. Metro	5,017	5,054	4,051	14,122
	10. Tanjung-Iman	5,397	2,491	3,936	11,824
	(Sub Total)	(17,018)	(11,525)	(13,753)	(42,296)
	Total	42,351	32,970	45,494	120,815

Table 4 - 24 BUILDING CONSTRUCTION PLAN OF S.P.C.

(1) PULO-1E

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure	1	60
Fan and Air Heater House		"	1	48
Main Building		Steel Structure	1	664
Fan Foundation		R.C. Structure	1	50
Silo Foundation		"	1	339
Senior Staffs' Houses	3	Brick Structure	3	70
Junior Staffs' Houses	4	"	4	50
Assistant Staffs' Houses	6	"	6	36
Silo				50 ton x 10
Total	13		18	1,787

(2) TANGAN-TANGAN

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure	1	60
Fan and Air Heater House		"	1	48
Main Building		Steel Structure	1	664
Fan Foundation		R.C. Structure	1	50
Silo Foundation		"	1	276
Senior Staffs' Houses	3	Brick Structure	3	70
Junior Staffs' Houses	4	"	4	50
Assistant Staffs' Houses	6	"	6	36
Silo				50 ton x 8
Total	13		18	1,724

(3) MEUREUDU

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		912
Fan Foundation		R.C. Structure 1		75
Silo Foundation		" 1		286
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	8	" 8	36	288
Silo		(6)		100ton x 8
Total	15	20		2,103

(4) SYANTALIRA-A S.P.C.

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		72
Main Building		Steel Structure 1		1,044
Silo Foundation		R.C. Structure 1		352
Senior Staffs Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	10	" 10	36	360
Silo		(10)		150ton x 10
Total	17	30		2,238

(5) UPANG

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		912
Fan Foundation		R.C. Structure 1		75
Silo Foundation		" 1		286
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	6	" 6	36	216
Silo				100ton x 8
Total	13	18		2,031

(6) BEJUNG

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		917
Fan Foundation		R.C. Structure 1		75
Silo Foundation		" 1		286
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	8	" 8	36	288
Silo				100ton x 8
Total	15	20		2,103

(7) ADC LAHAT

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		760
Fan Foundation		R.C. Structure 1		60
Silo Foundation		" 1		402
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	8	" 8	36	288
Silo				50 ton x 12
Total	15	20		2,052

(8) TUGUMULYO

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		48
Main Building		Steel Structure 1		664
Fan Foundation		R.C. Structure 1		50
Silo Foundation		" 1		207
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	6	" 6	36	216
Silo				50 ton x 8
Total	13	18		1,655

(9) WONODADI

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		660
Fan Foundation		R.C. Structure 1		60
Silo Foundation		" 1		402
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	6	" 6	36	216
Silo				50 ton x 12
Total	13	18		1,880

(10) KARANG ENDAH

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		60
Fan and Air Heater House		" 1		72
Main Building		Steel Structure 1		660
Fan Foundation		R.C. Structure 1		60
Silo Foundation		" 1		402
Senior Staffs' houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	6	" 6	36	216
Silo				50 ton x 12
Total	13	18		1,880

(11) TANJUNG IMAN

Buildings Type	Capacity	Construction Plan		
		Number of Buildings	Floor Space (m ²)	Total Area (m ²)
Generator Room		Block Structure 1		72
Main Building		Steel Structure 1		1,044
Silo Foundation		R.C. Structure 1		352
Senior Staffs' Houses	3	Brick Structure 3	70	210
Junior Staffs' Houses	4	" 4	50	200
Assistant Staffs' Houses	10	" 10	36	360
Silo				150ton x 10
Total	17	18		2,238

Table 4 - 25 Investment Costs of S. P. C.

(IN RD. 1000)

Location	Local				Foreign				Contingency	Sub Total	Total (2)	Total (1) + (2)
	#1 Consolidation of the housing site	#2 Foundation & Building	#3 Seed Processing Facilities	#4 Vehicles	#1 Consolidation of the housing site	#2 Foundation & Building	#3 Seed Processing Facilities	#4 Vehicles				
(1) Pulo-Te	25,825	672,919	31,576	750,320	16,152	247,670	525,350	22,671	811,843	837,995	1,699,838	
(2) TanjungTangan	25,825	681,991	29,621	737,437	16,152	278,673	505,400	22,671	822,876	905,185	1,728,061	
(3) Meureudu	25,004	835,569	38,480	899,053	16,152	345,719	624,036	36,171	1,022,078	1,124,285	2,146,363	
(4) Syamkalira (A)	34,238	1,253,567	84,434	1,372,242	21,535	665,343	880,194	49,671	1,636,743	1,778,417	3,287,882	
Sub Total	(110,892)	(3,446,048)	(184,111)	(3,739,031)	(69,991)	(1,537,405)	(2,534,980)	(131,184)	(4,273,560)	(4,273,560)	(8,013,869)	
(5) Upang	40,864	842,365	26,815	910,042	24,956	336,769	623,922	2,271	987,918	98,791	2,087,975	
(6) Betung	5,375	828,246	24,535	858,156	2,832	334,769	618,602	36,171	992,374	99,237	2,035,582	
(7) ADC Lahat	4,673	732,769	24,137	761,579	2,427	272,611	617,652	36,171	928,861	92,806	1,859,483	
(8) Tugumulyo	15,573	614,777	16,613	648,963	9,070	271,165	496,760	22,671	797,686	79,768	1,591,313	
Sub Total	(66,485)	(3,018,355)	(94,100)	(3,178,940)	(41,285)	(1,213,334)	(2,354,936)	(97,284)	(3,706,839)	(3,706,839)	(7,574,353)	
(9) Wonodadi	7,284	714,611	17,227	739,122	5,896	276,571	575,092	22,671	876,230	87,623	1,776,887	
(10) KarangKandah	7,299	715,342	17,227	739,868	3,783	274,571	575,092	22,671	876,117	87,611	1,777,582	
(11) TanjungIman	6,022	1,205,877	38,456	1,250,355	5,237	648,552	880,194	49,671	1,581,654	158,165	3,125,209	
Sub Total	(20,605)	(2,635,830)	(72,910)	(2,729,345)	(10,916)	(1,197,694)	(2,039,378)	(95,013)	(3,334,001)	(3,333,999)	(6,669,678)	
Total	(197,982)	(9,098,233)	(351,121)	(9,647,336)	(122,192)	(3,948,433)	(6,920,294)	(323,481)	(11,316,400)	(11,316,439)	(23,057,900)	

#1 Local transportation charge from Jakarta to site, of steel structures and other materials to be supplied from Japan. Costs of local shipping arrangement covering the waref accommodation, S.P.C. building (including mill shed) foundation, construction of mill, materials and construction.

#3 Costs of S.P.C. building's steel structures, reinforcement and (including shed and foundation of mill)

#4 Costs of S.P.C.'s facilities, mill, electrical facilities and spare parts (CIV Jakarta).

Note: Consultants fee is not included.

#2 Local transportation cost from Jakarta to the job site and installation work expenses.

Table 4 - 26 Recurrent Costs of S.P.C.

(Rp 1,000/year)

Location	Staff	Worker	Trans- portation	SPC Run- nings Cost	Fumigant	Packing	Vehicle	Total
1. Pulo-i.e.	9,102	2,196	720	3,400	164	13,180	648	29,410
2. Tangan-Tangan	9,102	2,136	720	3,300	136	10,940	648	26,982
3. Mersudu	11,377	2,864	1,440	3,600	264	21,250	648	41,503
4. Syantaria A	13,652	4,112	2,160	6,570	564	45,410	648	73,116
5. Upang	9,861	2,904	22,430	3,680	272	21,870	648	61,665
6. Betung	11,377	2,944	1,440	3,700	646	21,250	648	42,005
7. ADC Lahat	11,377	2,864	1,440	3,660	228	18,350	648	38,567
8. Tuau-Mulyo	9,102	2,256	720	5,910	232	18,680	648	37,548
9. Wonodadi	9,102	2,256	720	6,250	324	26,080	648	45,380
10. Karang-Endah	9,102	2,256	720	6,250	324	26,080	648	45,380
11. Tanjung-Imao	13,652	3,762	2,160	9,460	437	35,100	648	62,219
Total	116,806	30,550	34,670	52,840	3,591	258,190	7,128	503,775

Table 4 - 27 Investment Cost of Central Cold Storage, Jakarta

(1,000 Rp)

<u>Item</u>	<u>Foreign (CIF Jakarta)</u>	<u>Local</u>	<u>Sub-Total</u>
Cold Storage Units			
Type of 16.5m ² (3 kw) x 4 Set	50,680	---	50,680
" 6.6m ² (1.5kw) x 1 Set			
Electric Control Box & Wire	1,008	---	1,008
Local Transportation	---	42	42
Construction & Assembling (Including Electric work)	---	280	280
Repair of Building	---	1,200	1,200
Total	51,688	1,522	53,210

Recurrent Costs of Central Cold Storage, Jakarta

(x 1,000 Rp)

Power 4.5 kw	Lighting 1.5 kw	} 15,300 kWh/year	Rp.1,078/year
Operational			
Electric Charge	Rp 70.5/kw H		
Operating hour 4.5kw	8 Hr/day		

Table 4 - 28 Local Training Plan and its Costs at 1982 price

1000 Rp

Staff	No.	Period month	Cost per man/month	Year 1 m/m Cost	Year 2 m/m Cost	Year 3 m/m Cost	Year 4 m/m Cost	Year 5 m/m Cost	Total
Seed Grower etc	372		327	76 24,852	76 24,852	76 24,852	75 24,525	75 24,525	123,606
Staff	37		327	6 1,962	6 1,962	5 1,635	5 1,635	5 1,635	8,829

Table 4 - 29 EQUIPMENT LIST (SCCS, 3 PROVINCES)

Description	Number	
	Each Province	Total
(A) Laboratory Equipment		
Husker for Testing	2	6
Rice Grader	1	3
Thickness Grader	1	3
Crusher	2	6
Rotary Dry Oven	1	3
Desiccator	2	6
Weighing Can	30	90
Infra-red Moisture Meter	1	3
Potable Moisture Meter	1	3
Magnifier	1	3
Mirror Plate	1	3
Sample Pan	30	90
Grain Trier Set	1	3
Sample Divider	1	3
Tachometer	1	3
Grain Shape Tester	1	3
Double Beam Balance	1	3
"	1	3
Thermohygraph	1	3
Germinator	1	3
Pertidish	20	60
Sample Container	20	60
Analytical Balance	1	3
(B) Vehicles	1	3
Foreign currency Rp 46,530,000 (CIF. Jakarta)		
Local " Rp 3,207,000 (Germinator & Domestic Transportation Charges)		
Total Rp 49,737,000		
(Including Contingency)		

Fig. 4 - 1 Drying Shed

As shown in the following fig.(1), this typical type of the drying shed is observed mainly in Aceh (Kab. Aceh Barat). The shed is utilized for drying and storing paddy, usually constructed in the corner of the paddy field.

It can capacitate to pile up the stalk of paddy harvested from a block of the paddy field. Upon completion of the harvesting, the farmers pile up the stalk of paddy therein, and they work for threshing of the paddy.

The construction of the shed is consisting of timber pillar and beam, roofing is done by the coconut leaves. Around the shed, there is a small ditch provided for water drainage. For the protection of water penetration into the shed, wooden planks with 20 - 30 cm width attaching to the pillars are placed around the shed. At present, most of the stalk of paddy is placed on the ground directly, but in future it should be piled up on either wooden or bamboo dunnage.

For the piling of the stalk of paddy, it should be done that the panicle should be placed inwardly, keeping some space in between the row of the stalks for an appropriate ventilation.

Following fig.(2) indicates the general method of the piling of the stalks. As shown, for easier threshing work, the stalks are piled up in a way to the same direction, keeping enough space between the row of the paddy stalks.

However, as shown, in this case, no roofing is available, so that the stalks are exposed to the rain and sunshine directly, which ultimately will cause a deterioration of the quality of the seed paddy.

Fig. 4 - 1 (1) Drying & Storage of Paddy Stalk in Aceh Province.

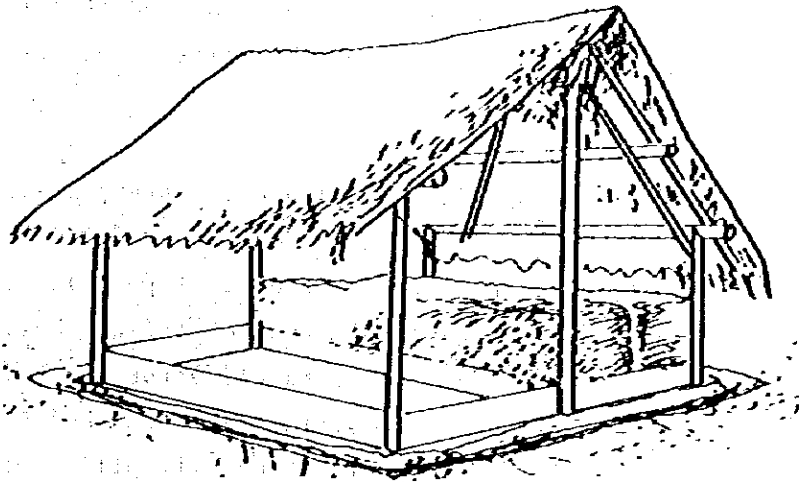


Fig. 4 - 1 (2) Out-Door Storage of Paddy Stalk

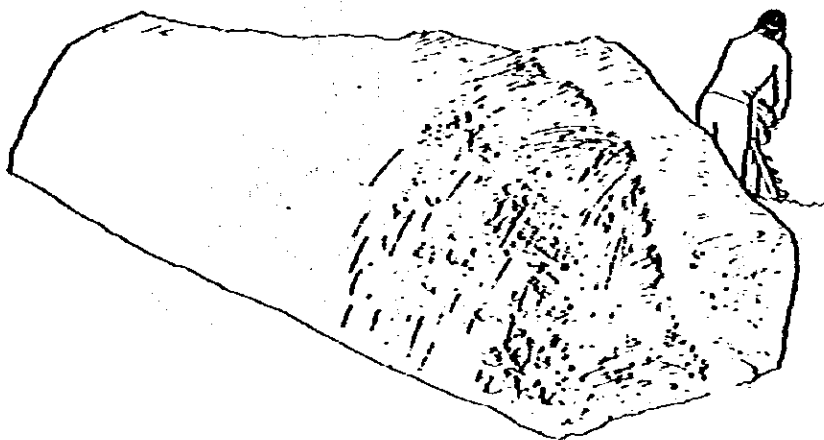


Fig. 4 - 2 Traditional Method of Threshing and Winnowing

Following fig.(1) show the threshing works done by beating the stalk of paddy. In our survey, the team observed that the paddy had been containing less than 17% of the moisture at the time of the threshing.

Meanwhile, following fig.(2) indicate the stamp threshing. At the initial stage, the stamping is done by crumpling the panicles into a ball by feet, then the ball of panicle spread gradually to complete threshing. In case of Ani-ani harvesting, stamping of the panicle is done immediately after the harvesting, while for the harvesting done by cutting; the stalk of paddy at the section 50 - 70cm from the panicle, usually piling of the stalks of paddy being conducted. At this time of piling, the moisture amounts to less than 17%

Following fig.(3) shows typical type of winnowing operation.

In Upang area, threshing and winnowing is done as shown in following fig.(4)

Fig. 4-2 (1) Method of threshing by beating



Fig. 4 - 2 (2) Method of Traditional Threshing

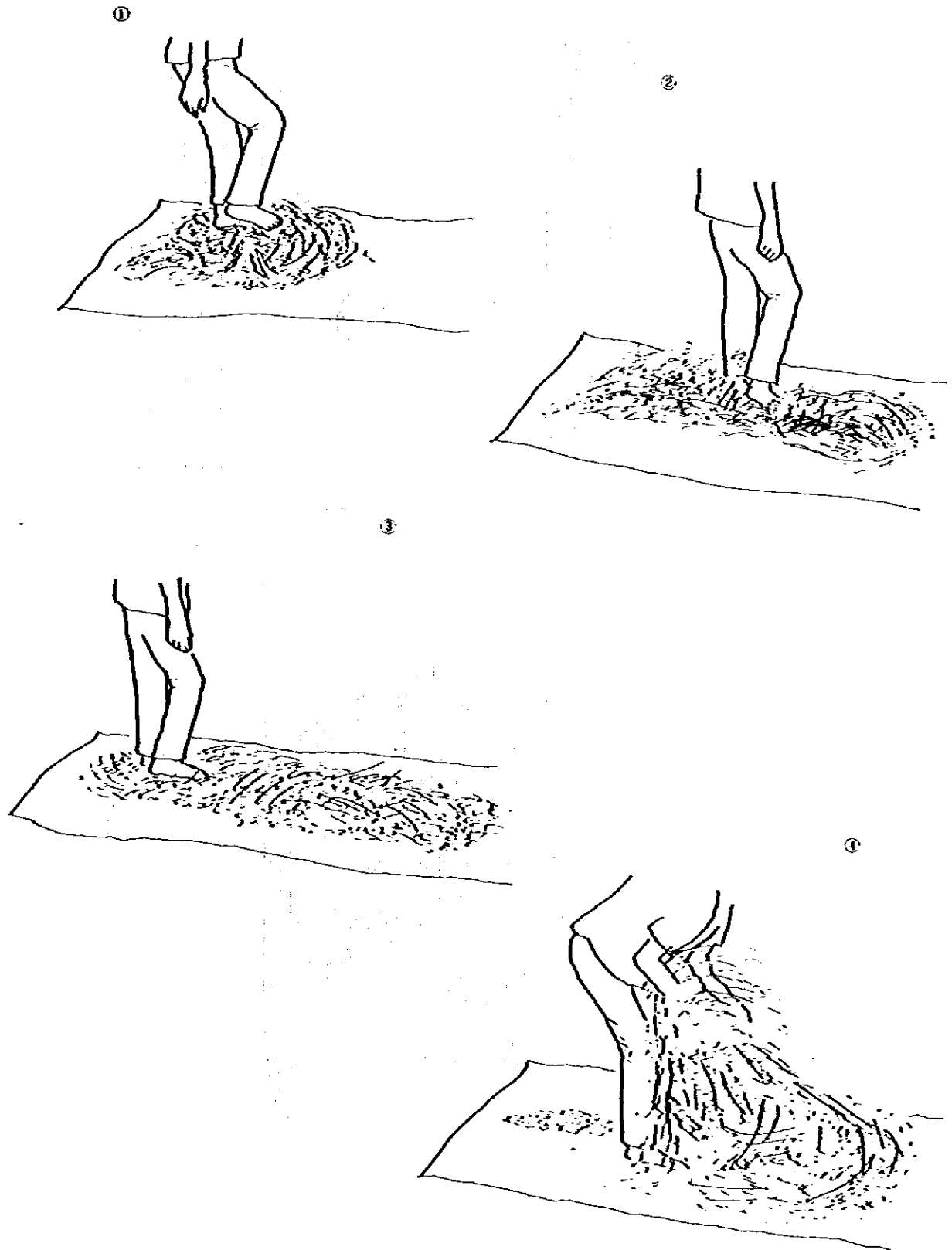


Fig. 4 - 2 (3)

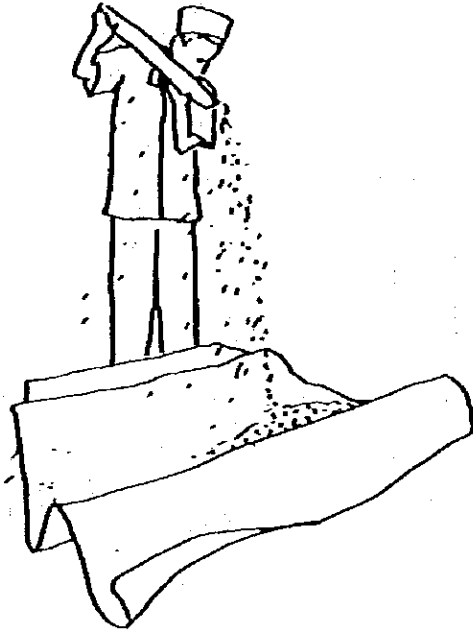


Fig. 4 - 2 (4)

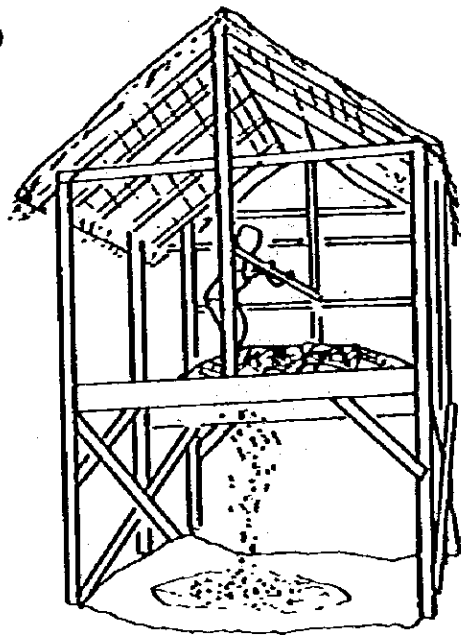
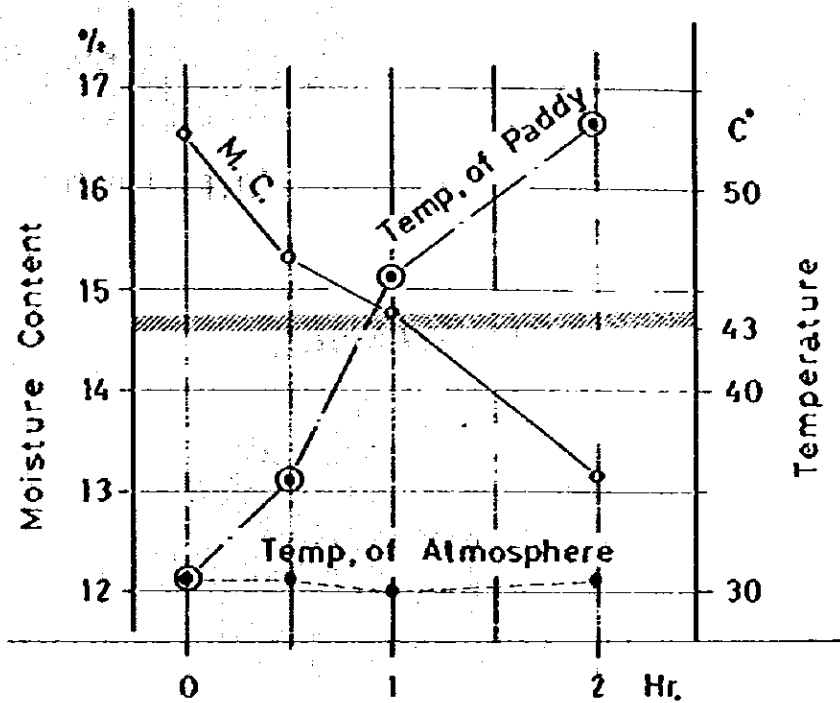


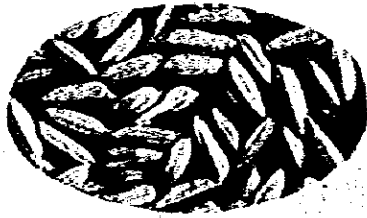
Fig. 4 - 3 Results of Sun-Drying test



Variety : Semeru

Time	Temperature of Atmosphere	Relative Humidity	Temperature of Paddy	Moisture Content (w.b.)
0 Hr	31 °C	60 %	31.5 °C	16.53 %
0.5 Hr	31 °C	60 %	35.8 °C	15.32 %
1 Hr	30 °C	65 %	46.1 °C	14.82 %
2 H	31 °C	60 %	52.8 °C	13.20 %

Fig. 4 - 4 - 1 Result of Assortment of Paddy

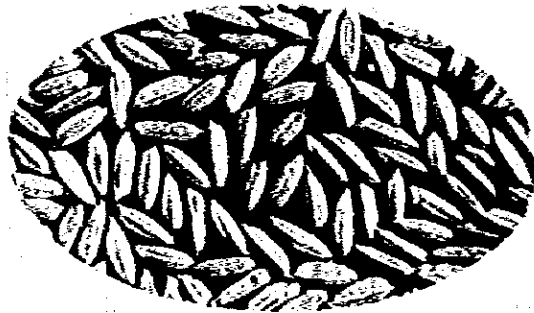


Immature rice

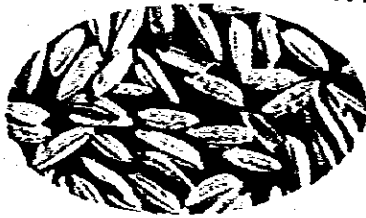


Off-type

"CISADANE,"



Whole seed



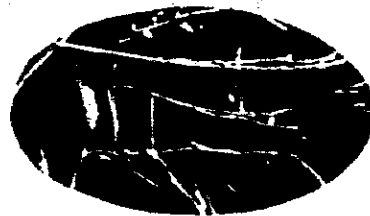
Husk & Abortive Paddy



Paddy with long pedicel

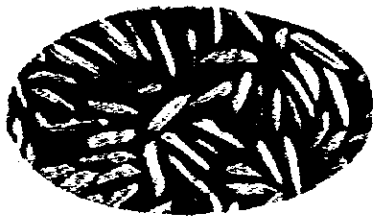


Husked rice

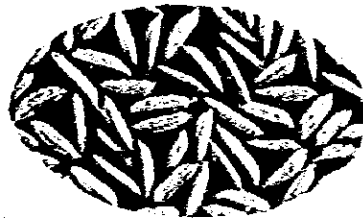


Impurities

Fig. 4 - 4 - 2 Result of Assortment of Paddy

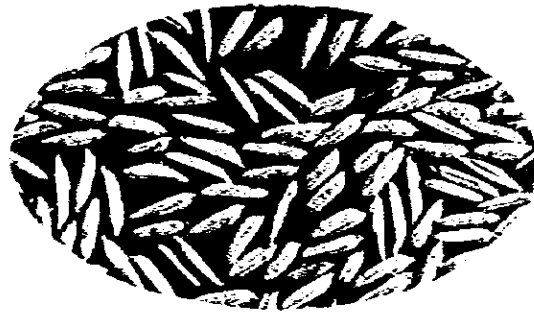


Immature rice



Off-type

"IR 36..



Whole seed



Husk & Abortive Paddy



Paddy with long pedicel

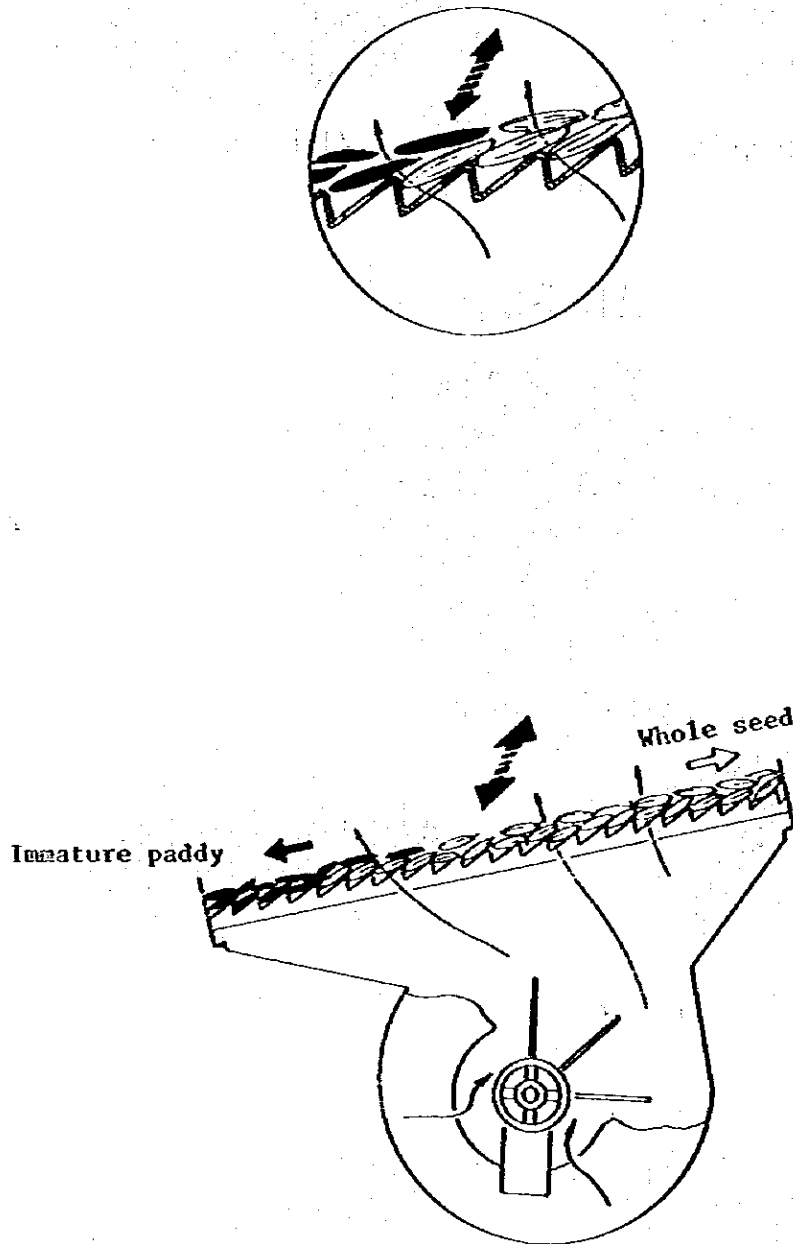


Husked rice



Impurities

Fig. 4 - 5 Mechanism of Gravity Separator



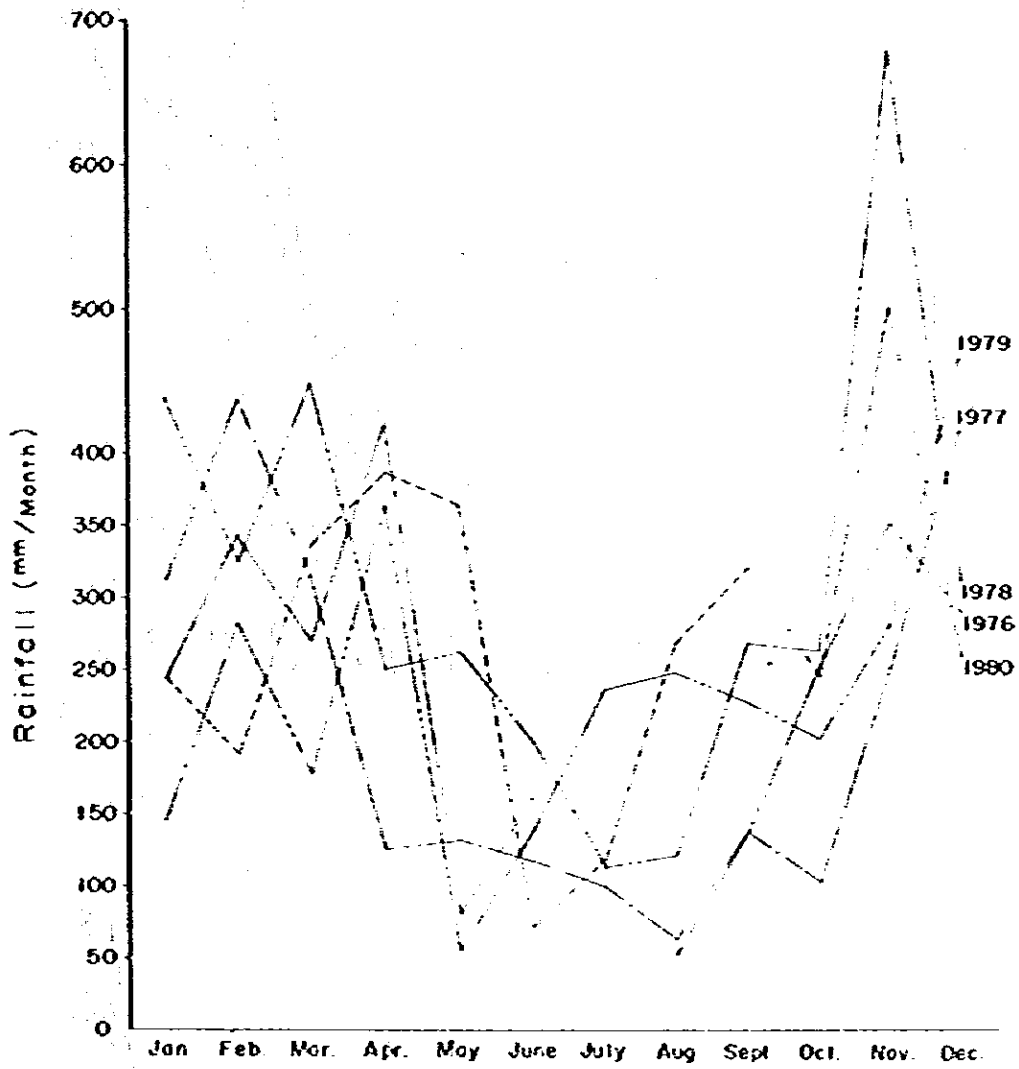


Fig. 4-6-1 Monthly Rainfall at BEIUNG in South Sumatra Province (1976-1980)

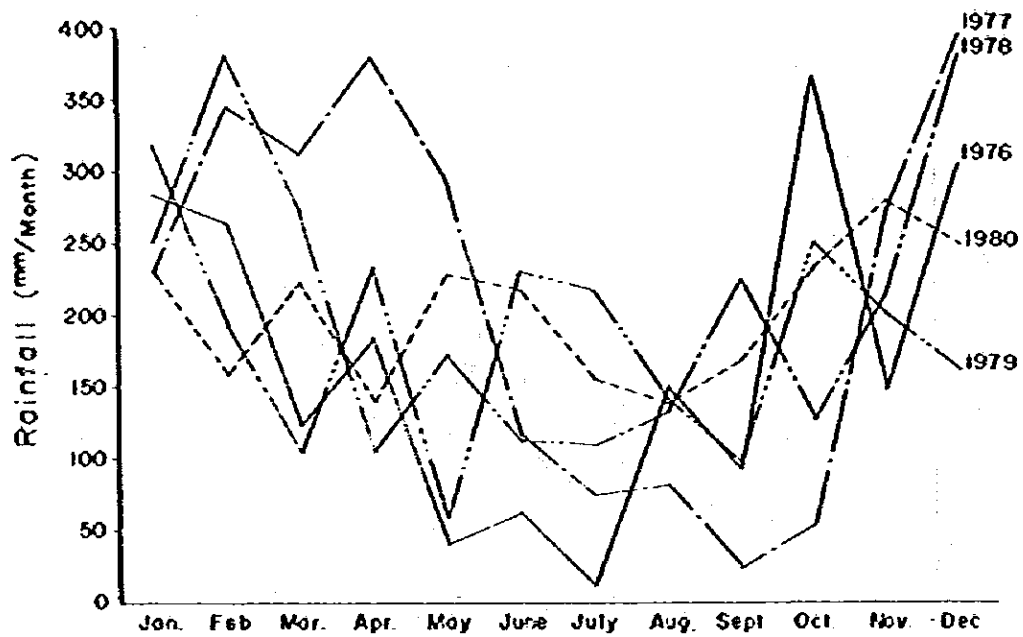


Fig.4 - 6 - 2 Monthly Rainfall at A.D.C. LAHAT (1976-1980)
(South Sumatera Province)

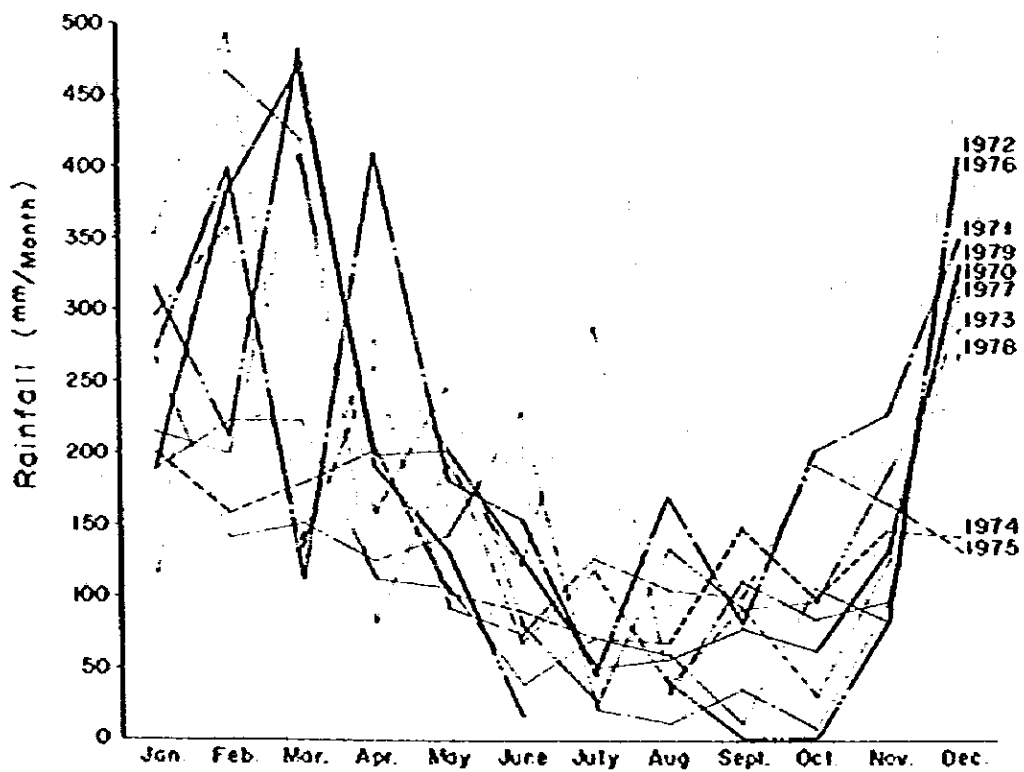


Fig.4 - 6 - 3 Monthly Rainfall at TEGINENENG (1971-1979)
(Lampung Province)

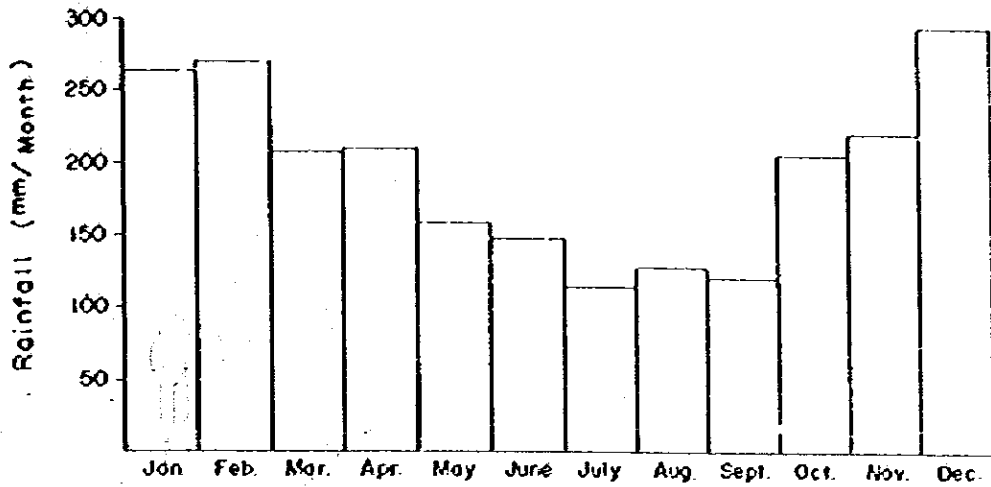


Fig.4 - 6 - 4 Mean Monthly Rainfall at A.D.C. LAHAT (1976-1980)
(South Sumatera Province)

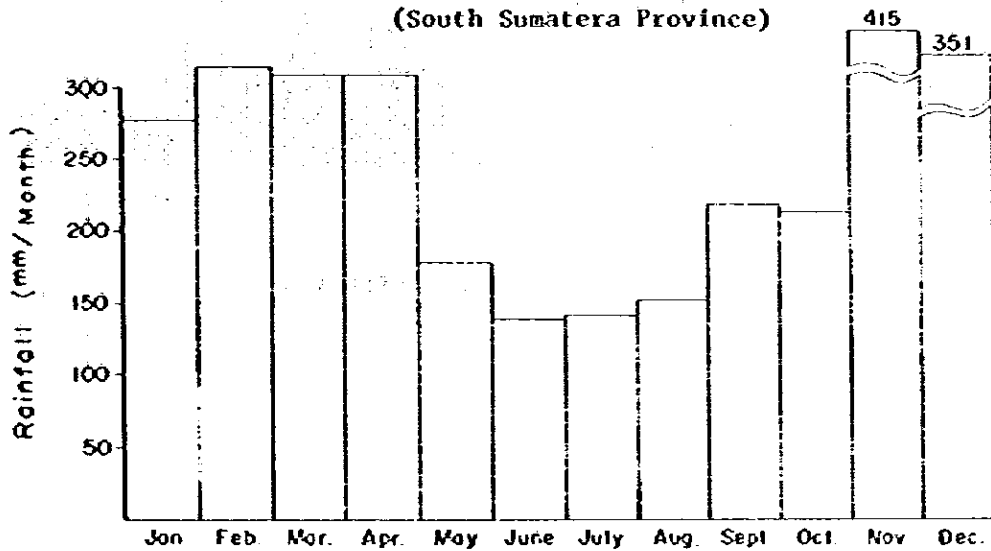


Fig.4 - 6 - 5 Mean Monthly Rainfall at BETUNG (1976-1980)
(South Sumatera Province)

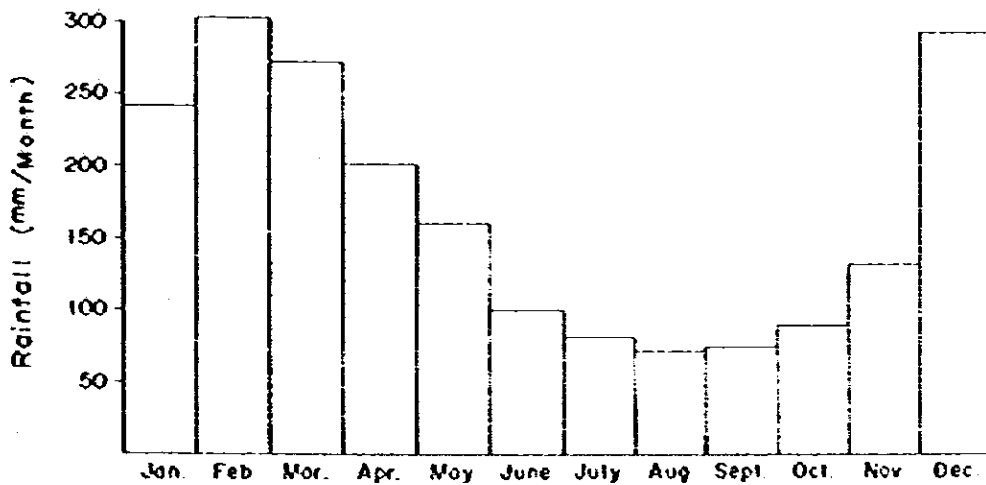


Fig. 4 - 6 - 6 Mean Monthly Rainfall at TEGINENENG (1971-1979)
(Lampung Province)

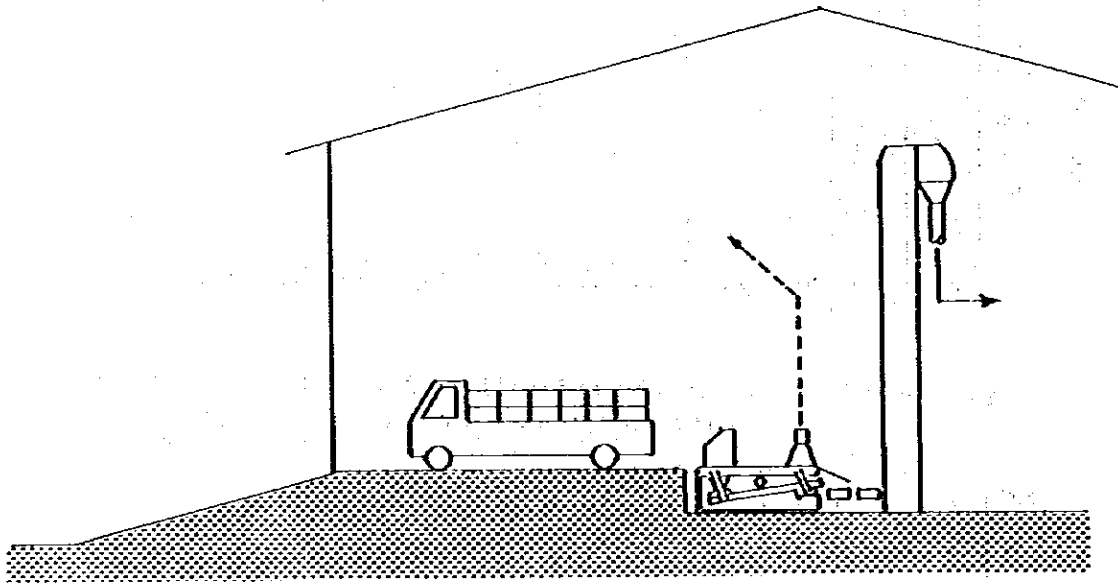
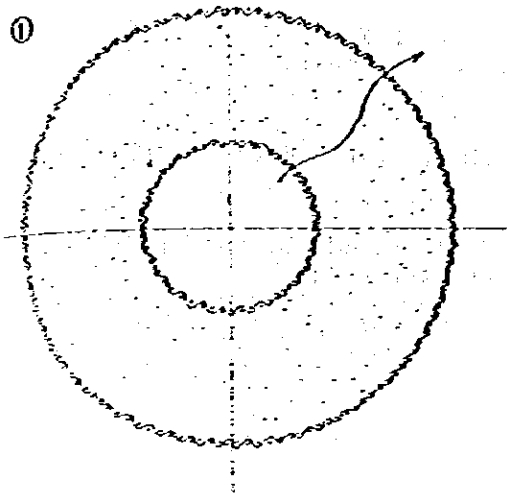


Fig. 4 - 7 Receiving Facilities

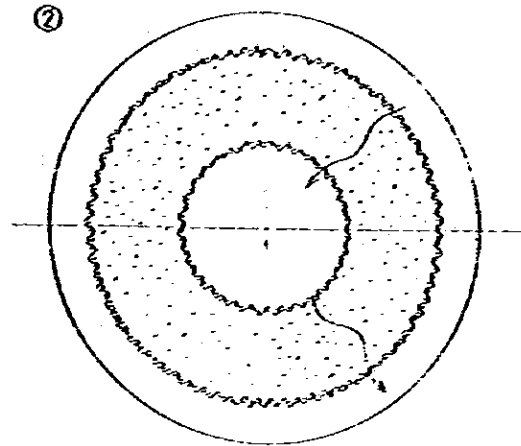
Fig. 4 - 8 Type of In-Bin-Dryer



Radial Direction Air-flow Type
(One-way Type)

Horizontal
Cut-View

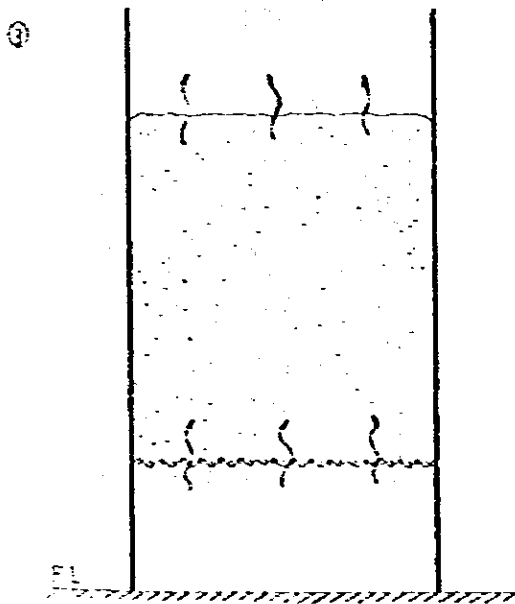
- Note: 1. Air-flow is directed from inside to the outside.
2. For indoor use only



Radial Direction Air-flow Type
(Two-way Type)

Horizontal
Cut-View

- Note: 1. Air-flow is directed from inside to the outside, and reversion of the direction is possible when it is so required.
2. Good for outdoor use



Floor Airation Type
Vertical Cut-View

- Note: 1. Air-flow is directed from the bottom to the upward.
2. Good for outdoor use

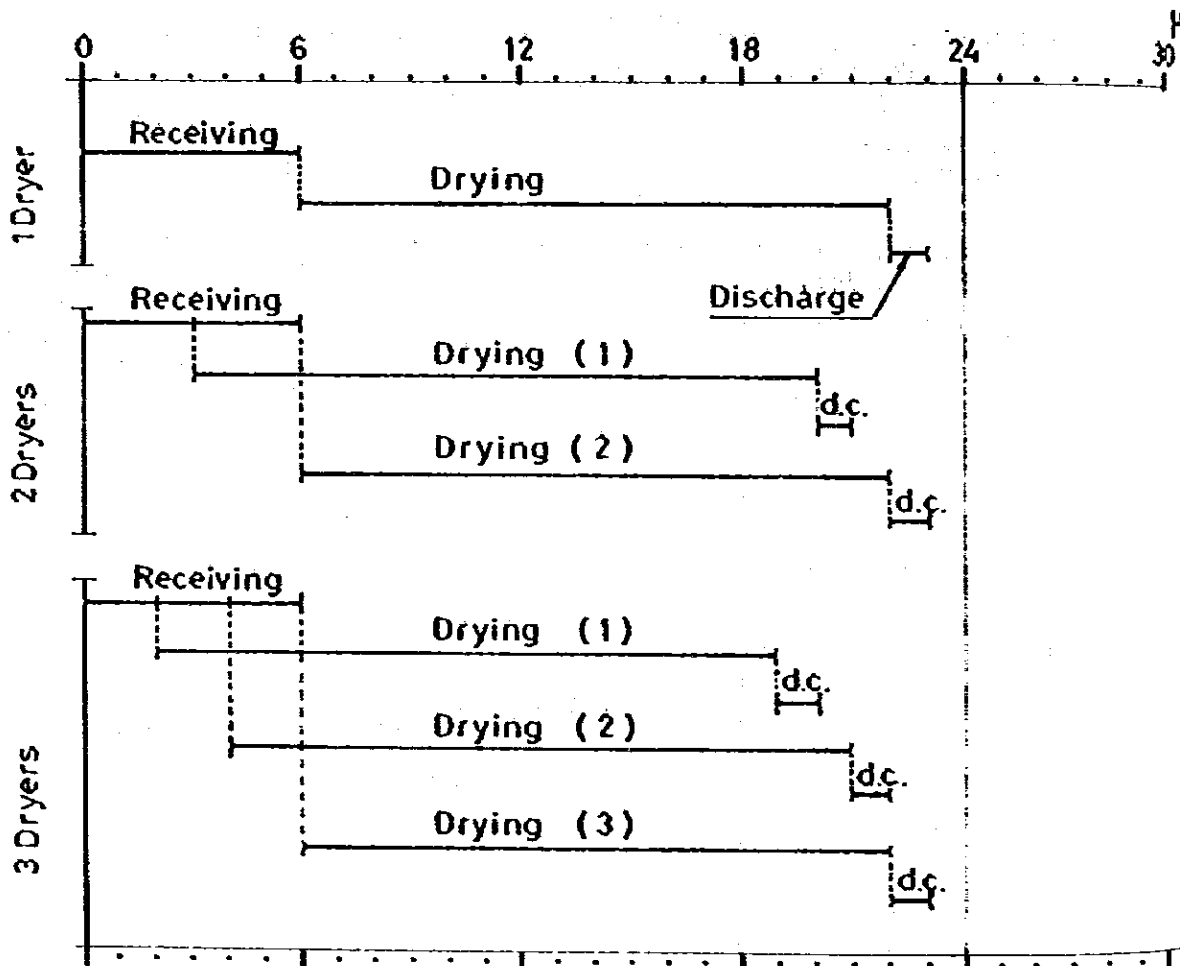
Fig. 4 - 9 Drying Process

In-Bin Dryer

1) Necessary capacity per unit

- Charging capacity : it should comply with the receiving capacity of each S.P.C.
- Storage capacity : 10 ton/paddy
- Volume of air required : 300 m³/min., Static pressure 100 ~ 125 mm H₂O
- Power : Diesel engine drive 28 HP
- Air heater : 50,000 Kcal/hr. (to be used rainy day and night time only)
- Discharging capacity : more than 10 ton/hr.

2) Schedule of Processing Operation



Daily Schedule of Receiving & Drying Process
(In-bin Dryer Type)

Reference 4-1. Statistics Relating to Rice Cultivation in Indonesia

(1) Paddy areas in 1980 and in Target year (1988)

Aceh Province

District	Paddy area in 1980				Paddy areas in Target year (1988)			
	lowland	irrigated	upland	Total	Extensification	Immigration	whole area	in which upland
Aceh Besar	21,044	10,586	124	21,168	615	-	21,783	124
Pidie	38,405	37,320	-	38,405	1,132	-	39,537	-
Aceh Utara	48,372	25,432	2,154	50,526	1,308	5,000	56,834	7,154
Aceh Tengah	10,551	8,031	350	10,901	1,431	2,000	14,332	2,350
Aceh Tenggara	22,000	21,033	475	22,475	630	-	23,105	475
Aceh Timur	24,945	11,063	7,391	32,336	1,186	4,000	37,522	12,391
Aceh Barat	29,439	20,019	1,917	31,356	5,188	4,000	40,544	5,917
Aceh Selatan	16,011	15,511	3,325	19,336	5,878	5,000	30,214	8,325
Selang	-	-	234	234	-	-	234	234
Total	210,767	148,995	15,970	226,737	17,368	20,000	264,105	35,970

(2) Paddy Harvested areas and production by field type
(S. Sumatera Province)

Years	Lowland		Upland		Tidal		Flooded		Total	
	Area ha	production ton	Area ha	production ton	Area ha	production ton	Area ha	production ton	Area ha	production ton
1976	92,437	341,776	119,604	141,341	39,844	106,281	105,645	218,672	357,530	808,070
1977	100,292	355,082	125,226	159,090	43,822	105,564	106,639	232,779	375,979	852,515
1978	98,969	359,174	136,148	181,072	48,640	126,268	116,905	238,971	398,662	905,485
1979	96,608	359,149	117,353	189,031	63,288	138,240	135,191	323,360	412,440	1,009,780
1980	102,142	400,661	108,396	165,472	65,449	150,936	136,102	375,165	412,089	1,097,234

(3) Estimated areas of paddy field by Agriculture Service of
S. Sumatera Province (S. Sumatera Province)

Years	lowland			upland	Tidal	flooded	Total
	rainy season	dry season	Total				
1983	90,250	24,549	114,799	101,061	70,938	139,527	426,325
84	92,950	29,087	122,037	97,220	71,726	140,088	431,071
85	94,734	30,937	125,671	96,999	73,432	139,709	435,811
86	96,555	33,064	129,559	96,080	74,569	140,294	440,502
87	98,757	35,777	134,534	93,660	75,409	141,709	445,312
88	100,745	38,154	138,799	91,466	76,888	142,800	449,953

Remarks: Upland excluding transmigrant land.

(4) Target areas of paddy intensification and non intensification

1) Aceh Province

	Intensification			non intensification			G. total
	BIKAS	IKMAS	total	lowland	upland	Total	
pelita I							
1969	2,338	5,634	7,972	195,895	20,055	215,950	223,922
70	474	10,415	10,889	189,823	19,246	209,069	219,955
71	4,100	15,681	19,781	179,189	18,605	197,794	217,575
72	4,466	39,886	44,353	157,886	19,246	177,132	221,459
73	4,013	7,129	11,142	195,418	21,339	216,757	227,899
pelita II							
74	19,556	1,105	20,661	188,464	20,985	209,449	230,119
75	16,053	2,064	18,117	185,682	18,563	204,245	222,362
76	10,487	51,193	61,680	154,665	24,673	179,338	241,018
77	7,074	60,410	67,484	152,445	24,106	176,551	244,035
78	6,414	56,489	62,903	142,554	24,339	166,893	229,755
pelita III							
79	10,938	75,110	86,048	126,906	15,644	142,550	228,598
80	9,792	74,320	84,113	126,043	15,319	141,362	225,475
81	12,984	104,417	117,401	101,448	17,250	118,698	236,099
82	14,982	108,354	123,336	96,766	17,036	113,802	237,138
83	16,500	114,202	130,702	90,652	16,822	107,474	238,176
pelita IV							
84	18,553	117,835	136,388	92,079	20,863	112,942	249,330
85	20,225	120,430	140,655	88,680	21,072	109,752	250,407
86	22,897	122,987	145,884	84,111	21,489	105,600	251,484
87	24,568	124,945	149,513	81,350	21,698	103,048	252,561
88	26,240	126,702	152,942	78,970	21,506	100,476	253,418

Source: Same as above table

2) Lampung (Pelita III)

Years	Intensification			Non-Intensification			G. Total
	Lowland	Upland	Total	Lowland	Upland	Total	
1979	102,000	8,800	110,000	55,801	93,399	149,200	260,000
1980	95,650	17,000	112,650	55,920	96,670	152,590	265,240
1981	93,665	20,460	114,125	56,035	101,810	157,845	271,970
1982	98,537	22,440	120,977	56,159	103,754	159,913	280,890
1983	101,419	24,750	126,169	56,278	107,953	164,231	290,400

(5) Target and realized Areas of paddy cultivation intensified

1) Lowland

	BIMAS			INMAS			Total		
	Target	Realized	%	Target	Realized	%	Target	Realized	%
1978/79	19,000	16,019	84.3	18,600	8,532	45.8	37,600	24,551	65.3
1979/80	22,500	22,080	98.1	12,500	24,080	192.6	35,000	46,160	131.9
1980/81	35,450	29,128	82.2	8,400	17,977	214.0	43,850	47,105	107.4

Note: 1978/79 = Dry season of 1978 + Wetseason of 1978/79

2) Upland

	BIMAS			INMAS			Total		
	Target	Realized	%	Target	Realized	%	Target	Realized	%
1978/79	4,750	4,098	86.3	6,000	8,820	147.0	10,750	12,918	120.2
1979/80	4,600	3,519	76.5	3,500	1,636	46.5	8,100	5,145	63.5
1980/81	6,800	5,948	87.5	1,700	8,192	481.9	8,500	14,140	166.3

3) Total

	BIMAS			INMAS			Total		
	Target	Realized	%	Target	Realized	%	Target	Realized	%
1978/79	23,750	20,117	84.7	24,600	17,352	70.54	48,350	37,469	77.5
1979/80	27,100	25,599	94.5	16,000	25,706	160.7	43,100	51,305	119.0
1980/81	42,250	35,076	83.0	10,100	61,245	606.4	52,350	96,321	184.0

(6) INSUS, INMUM Areas of 1980 in Aceh province

ha

District	INSUS		INMUM		Total	Non intensification		G. Total
	79/80	1980	79/80	1980		lowland	upland	
Aceh								
Besar	2,017	361	5,708	1,651	9,737	12,091	-	21,914
Sabang	-	-	-	-	-	-	229	229
Pidie	1,376	-	29,760	1,280	32,416	2,118	-	34,535
Aceh								
Utara	3,249	2,458	10,862	3,038	19,607	19,119	1,879	40,606
Aceh								
Tengah	117	-	824	-	941	9,205	325	10,491
Aceh								
Tingur	601	700	6,558	1,903	9,762	22,480	7,361	39,604
Aceh								
Tanggara	987	153	3,527	289	4,956	16,136	300	21,393
Aceh								
Barat	721	35	776	1,127	2,659	30,675	1,886	35,221
Aceh								
Selatan	1,251	109	2,121	549	4,030	14,216	3,254	21,502
Total	10,319	3,816	60,136	9,837	84,108	126,043	15,319	225,475

Source: Agricultural service of Aceh province

79/80 --Ket season
80 --Dry season

(7) Diffusion of Improved Varieties

1) Diffusion of Improved Varieties in Aceh Province
(whole Province)

Years	Improved ha	Total planted area ha	Diffusion ratio %
1977	70,375	244,035	28.8
78	62,738	229,796	27.3
79	84,757	228,598	37.1
80	82,684	225,475	36.7
81	83,172	236,099	35.2
82	116,229	237,138	49.0

Remarks: Wet season only

Source: Agricultural service of Aceh Province

(by district)

District	Dry season of 1980				Wet season of 1980/81				whole season	Diffusion Ratio
	VUIW	VUB	VUL	Total	VUIW	VUB	VUL	Total		
Aceh besar	2,857	82	-	2,939	9,707	78	-	9,785	12,724	60.1
Pidie Aceh	-	-	-	-	32,055	-	439	32,494	32,494	84.1
Utara Aceh	14,018	-	-	14,018	20,297	-	-	20,297	34,315	67.9
Timur Aceh	408	-	-	408	8,989	331	99	9,419	9,827	30.4
Tengah Aceh	-	-	-	-	-	-	-	-	-	0.0
Barat Aceh	276	-	-	276	437	36	-	473	749	2.4
Selatan Aceh	331	625	-	956	1,297	178	49	1,524	2,480	12.8
Tenggara	4,099	538	-	4,637	8,859	915	-	9,774	14,411	64.1
Total	21,989	1,245	-	23,234	81,641	1,538	587	83,766	107,000	47.5

Remarks: VUIW= Varietas Unggul Tahun Wering
VUB = Varietas Unggul Baru
VUL = Varietas Unggul Lama

2) S. Sumatera Province

ha.

District	Dry season of 1980				Wet season of 1980/81				G.Total	Diffusion ratio
	VUTW	VUB	VUL	Total	VUTW	VUB	VUL	Total		
palembang	-	-	-	-	45	739	-	784	784	8.3
Maba	320	5,584	-	5,904	320	5,584	-	5,904	11,808	9.5
OKI	1,380	21,642	-	23,022	-	-	-	-	23,022	22.6
QKU	2,497	928	44	3,469	20,010	7,725	5,318	33,053	36,522	63.5
Liot	146	335	-	481	146	336	-	482	963	1.5
Lahat	333	856	393	1,582	452	3,846	3,730	8,028	9,610	24.4
Mura	5,253	2,518	54	7,825	6,313	473	92	6,878	14,703	36.1
Bangka	-	-	-	-	-	-	-	-	-	0
pankal	-	-	-	-	-	-	-	-	-	0
pinang	-	-	-	-	-	-	-	-	-	-
Bellitung	-	-	-	-	-	-	40	40	40	2
Total	9,930	31,864	491	42,283	27,287	18,702	9,180	55,169	97,453	23.4

Remarks: See Table 1)

3) Lampung Province

ha.

District	Dry season of 1980				Wet season of 1980/81				G. Total	Diffusion ratio
	VUTW	VUB	VUL	Total	VUTW	VUB	VUL	Total		
Lampung Utara	463	140	24	627	1,300	855	406	2,561	3,188	45.5
Lampung tengah	25,727	35	51	25,813	58,449	52	57	58,558	84,371	58.4
Lampung Selatan	2,338	3,832	963	7,133	5,622	14,254	4,467	24,343	31,476	43.5
Total	28,528	4,007	1,038	33,573	65,371	15,161	4,930	85,462	119,035	43.4

Remarks: See Table 1)

Reference 4-2 Processing Capacity of Paddy Seed at Each Process

For Tugu-Mulyo, Wonodadi and Karang-Endah, all of S.P.C.s are scheduled to work twice a year respectively, because of their capability, and the areas also capable to produce double croppings provided with irrigation facilities.

All other S.P.C.s are, therefore, calculated on its single crop basis.

For example, required amount of the processing of the paddy for each season is calculated on the basis of the annual amount of the requirement of the seed concerned as follows:

- a) The amount of annual requirement is calculated on the basis of paddy processed with 13% of the moisture.
- b) For the upland paddy, 70% of yielding percentage has been applied while 80% of the rate is applied for other paddies required for the processing.
- c) For the basic estimation, maximum 20% of moisture has been applied for the paddy at the time of the receiving.
- d) Three (3) percent of the admixture shall be removed at the precleaning operation.
- e) The following formula is applied for the calculation of the weight of low paddy which includes the admixture;

$$A \times \frac{100 - M_2}{100 - M_1} \times \frac{100}{P}$$

Where,

- A : The amount of processed paddy produced in rainy season
(Dried paddy, ton/season)
- M₁ : 20%; the moisture content of paddy seed at the time of receiving
- M₂ : 13%; objective moisture after the processing
- P : Rate of the processing; 70% for upland and 80% for other cultivating areas.

Processing Capacity of Paddy Seed at Each Process (For example)

Province	Location	Required capacity of paddy seed per year			Processing capacity of paddy seed for rainy season crop at each process			
		Dried & cleaned paddy seed M.C. 13% (ton/year)	Raw paddy seed including impurities M.C. 20% (ton/year)	Raw paddy seed including impurities M.C. 20% (ton/season)	Pre-cleaned raw paddy seed M.C. 20% (ton/season)	Dried & pre-cleaned paddy seed M.C. 13% (ton/season)	Dried & cleaned paddy seed M.C. 13% (ton/season)	
ACEH	1 Pulo-je	410	553	553	536	493	410	
	2 Tangan-Tangan	340	459	459	445	409	340	
	3 Meureudu	660	895	895	868	798	660	
	4 Syamsalira(A)	1,410	1,906	1,906	1,848	1,700	1,410	
S.SUMATRA	5 Upang	680	923	923	895	823	680	
	6 Berung	660	1,021	1,021	990	910	660	
	7 ADC Lahat	570	882	882	855	786	570	
	8 Tugu-Mulyo	580	784	392	380	350	290	
LAMPUNG	9 Wonodadi	810	1,100	550	533	490	405	
	10 Karang Endah	810	1,100	550	553	490	405	
	11 Tanjung Iman	1,091	1,695	1,695	1,644	1,512	546	

Reference 4-3 Trafficability Survey

The operating efficiency of construction machinery on soil which has a weak foundation is affected by soil classification and soil moisture ratios. Such operating efficiency is called trafficability and is measured by the cone penetrometer index. The required cone penetrometer index of various construction machinery is shown in the table below.

Required Cone Penetrometer Index of Construction Machinery

<u>Construction Machine</u>	<u>Minimum Cone Penetrometer Index (kg/cm²)</u>
Swamp bulldozer	3
Medium-sized bulldozer	5
Scrape dozer	6
Carry-all scraper	7
Motor scraper	10
Dump truck	12

The results of the field survey give the cone penetrometer index of each seed farm and type of machinery as follows:

<u>Name of Seed Farm</u>	<u>Cone Penetrometer Index</u>	<u>Type of Machinery</u>
Keumala	3 - 4	Swamp bulldozer
Tangan-Tangan	5 - 6	Medium-sized bulldozer
Upang	3 - 4	Swamp bulldozer
Belitang	3 - 4	Swamp bulldozer
ADC Lahat	6 - 7	Large-sized bulldozer
Tugumulyo	4 - 5	Swamp bulldozer
Way Jepara	3 - 4	Swamp bulldozer
Metro	5 - 6	Medium-sized bulldozer
Tanjungman	7 - 8	Large-sized bulldozer

**Table 5 - 1 Required Number of Weigher and Moisture Meter
for Collection of Paddy Seed**

	Weigher	Portable Moisture Meter (Resistance Type)
1 Pulo-i e	1	2
2 Tangan-Tangan	1	2
3 Meureudu	2	4
4 Syantarila (A)	3	6
5 Upang	2	4
6 Betung	2	4
7 ADC Lahat	2	4
8 Tugumulyo	1	2
9 Konodadi	1	2
10 Karang Endah	1	2
11 Tanjung-Iman	3	6
Total	19	38

Table 5 - 2 Required Minimum Number of S.P.C. Staff and Workers

	Staff					Worker	
	C.M.	M.Class	Staff	Checker	Driver	Full Time Worker	Part Time (days)
1. Pulo-le	1	3 (6)	3 (6)	2	1	4	6(12) x 190
2. Tangan-Tangan	1	3 (6)	3 (6)	2	1	4	6(12) x 180
3. Meureudu	1	3 (6)	3 (6)	4	2	6	8(16) x 160
4. Syamsalira(A)	1	3 (6)	3 (6)	6	3	8	10(20) x 200
5. Upang	1	3 (6)	3 (6)	4	-	6	8(16) x 165
6. Betung	1	3 (6)	3 (6)	4	2	6	8(16) x 170
7. ADC Lahat	1	3 (6)	3 (6)	4	2	6	8(16) x 160
8. Tugu-Muryo	1	3 (6)	3 (6)	2	1	4	6 (12) x 200
9. Wonodadi	1	3 (6)	3 (6)	2	1	4	6(12) x 200
10. Karang-Endah	1	3 (6)	3 (6)	2	1	4	6(12) x 200
11. Tanjung-Iman	1	3 (6)	3 (6)	6	3	8	10(20) x 165

Required number of the staffs indicated in blanket showing, the assignment when the operation of receiving cleaning of paddy and packing are conducted simultaneously.

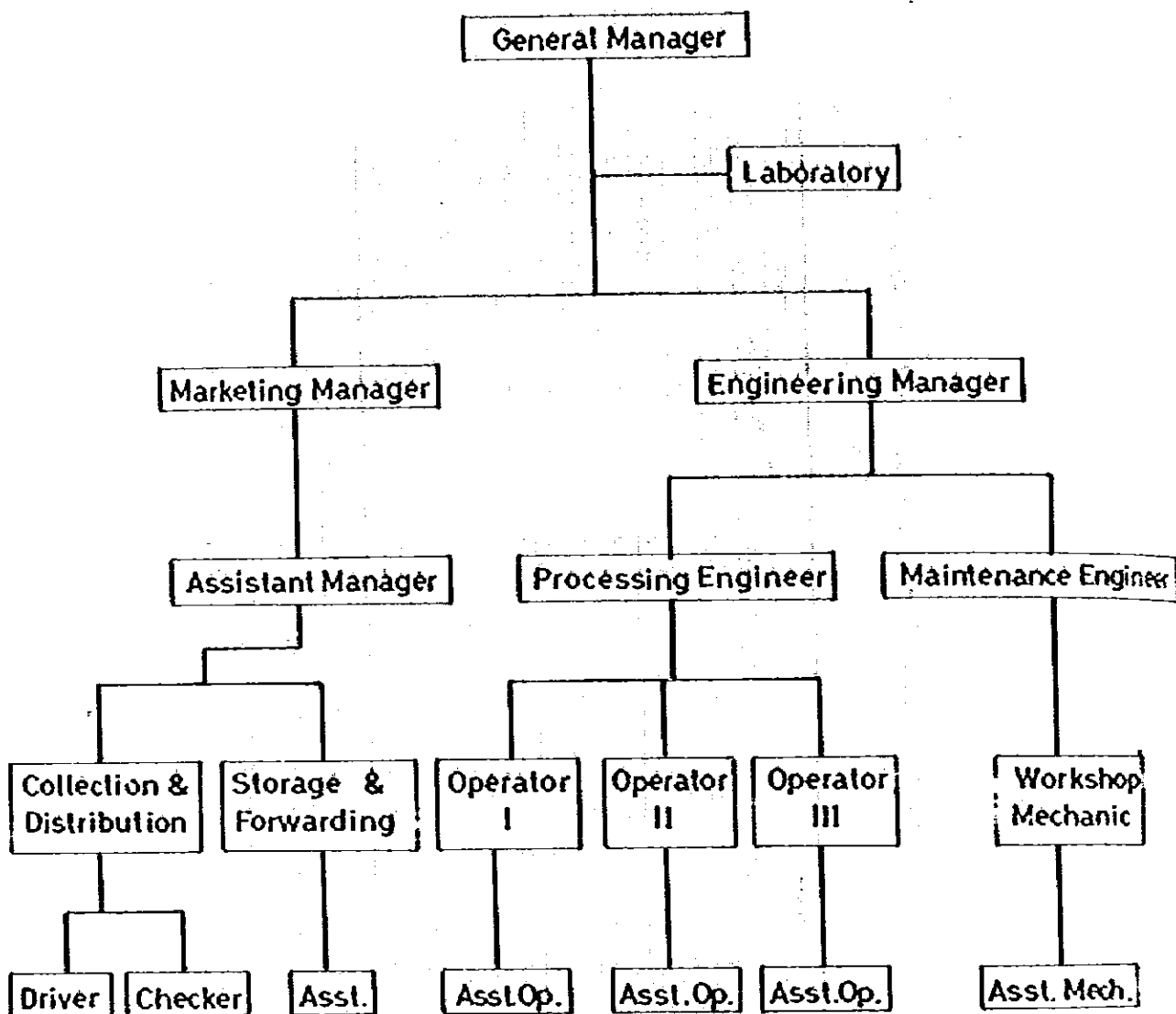


Fig. 5 - 1 Organization Scheme of Seed Processing & Distribution Center

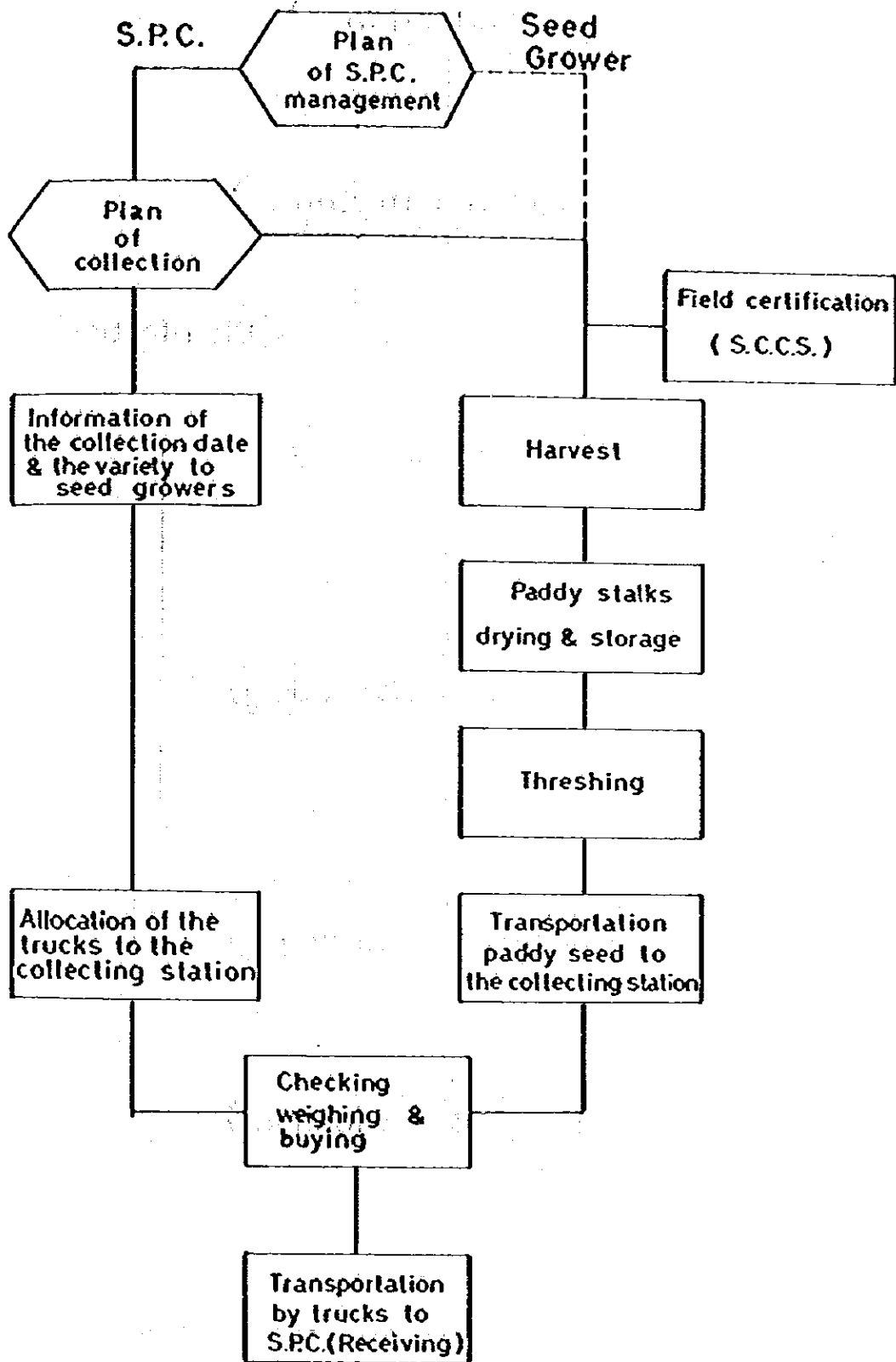


Fig. 5 - 2 PROCUREMENT ORGANIZATION SCHEME for E.S.

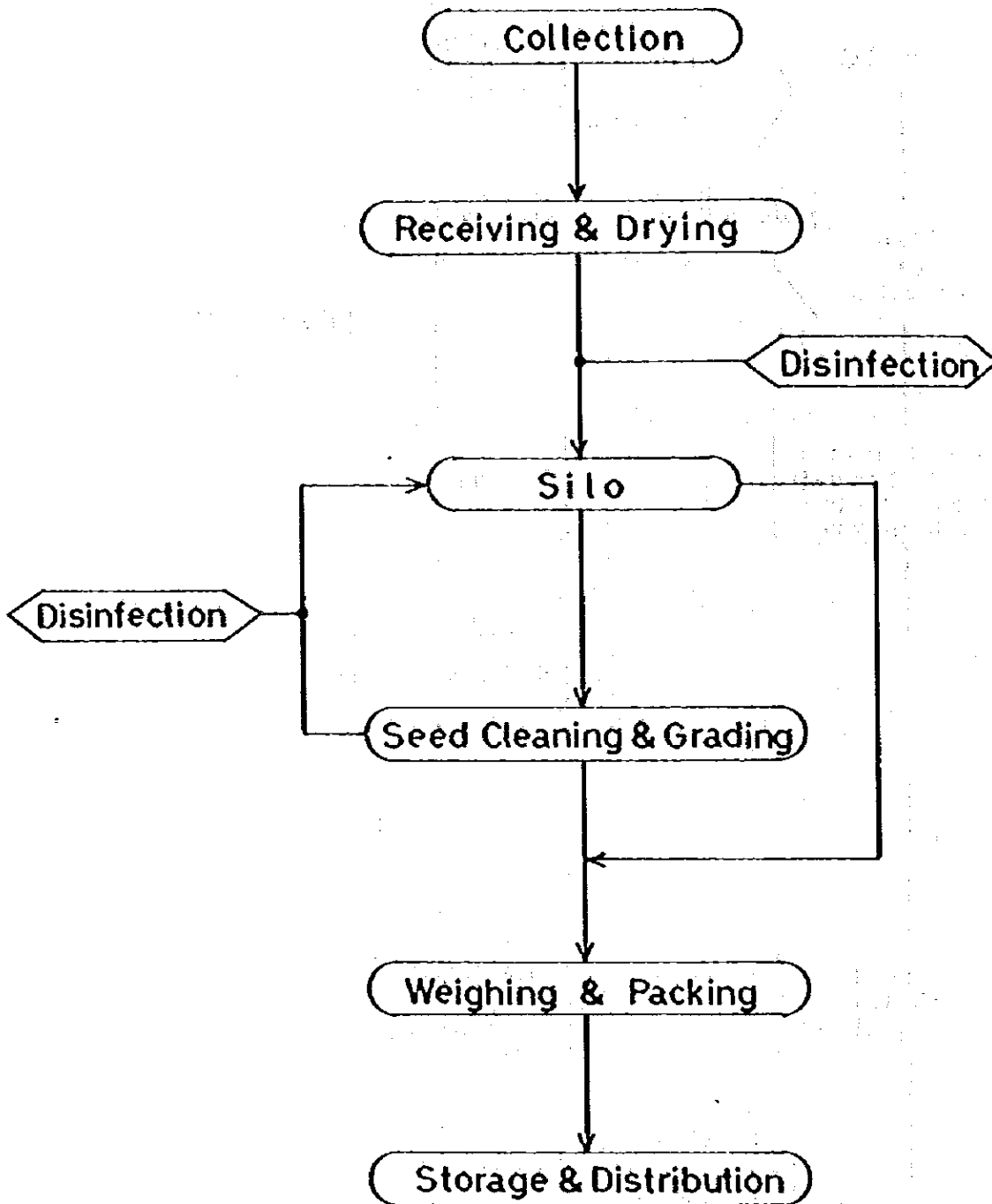


Fig. 5 - 3 Operation system of S.P.C.

Table 6 - I Summary of Project Costs Estimated at 1982 Price

	Indonesian Currency (1,000 Rp)		U.S. \$ (1000\$)	
	Local	Foreign	Local	Foreign
		Total		Total
1. Investment costs	13,115,294	15,135,014	28,250,308	43,196
Civil works	1,342,186	1,003,068	2,345,254	3,586
Buildings	10,194,707	4,396,433	14,591,140	22,310
Equipment	386,102	7,877,832	8,263,934	12,636
Vehicles	0	481,791	481,791	737
Contingency	1,192,299	1,375,910	2,568,209	3,927
2. Recurrent costs	687,866	0	687,866	1,052
Seed production	123,330	0	123,330	189
PS and SS	35,231	0	35,231	54
Running costs	44,230	0	44,230	68
Staff's wages	43,869	0	43,869	67
Seed processing & distribution	499,867	0	499,867	764
Operation	367,221	0	367,221	561
Staff's wages	132,646	0	132,646	203
Seed control	2,136	0	2,136	3
Operation	840	0	840	1
SCCS	1,296	0	1,296	2
Contingency	62,533	0	62,533	96
3. Training	132,435	0	132,435	202
Sub Total	13,935,595	15,135,014	29,070,609	44,450
4. Central seed storage investment	2,860	56,857	59,717	91
Building	1,674	56,857	58,531	89
Equipment	1,200	-	1,200	2
Contingency	322	51,688	52,010	79
Recurrent	1,186	5,321	6,507	8
Operation	1,078	0	1,078	2
Contingency	108	0	108	0
Grand Total	13,938,455	15,191,871	29,130,326	44,541
Consultant	620,156	1,447,030	2,067,186	3,161

Note:

1. Physical contingency is estimated as 10 % of total costs, but excluded price escalation.
2. Consultant fee is estimated based on individual actual fee past.
3. Converted rates 1 US\$ = 654 Rp
1 Yen = 2.8 Rp
4. Price escalation during project implementation is excluded.
5. Current costs is annual rate of the target year.

Table 6 - 2 (1) Investments Costs After Price Adjustment
(exclude the costs of central seed cold storage)

	(1000 Rp)													
	Year 1		Year 2		Year 3		Year 4		Year 5		Total			
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign		
Civil works														
PS, SS, Farm			75,594	50,341	743,164	458,240	1,044,360	595,101	-	-	1,863,322	1,103,722		
S.P.C.					15,084	7,430	230,745	103,065	213,713	47,815	359,542	160,316		
Buildings														
PS, SS, Farm					229,013	-	612,328	-	-	-	841,341	-		
S.P.C.					3,742,358	1,605,138	10,044,180	3,979,211	2,981,115	-	16,771,853	5,584,349		
Equipments														
PS, SS, Farm			44,478	1,069,777	-	-	-	-	-	-	44,478	1,069,777		
S.P.C.					26,566	421,100	549,899	8,053,146	35,129	475,079	611,394	8,949,323		
SCCS									5,862	29,657	5,862	29,657		
Vehicle														
PS, SS, Farm				153,517	-	-	-	-	-	-	-	153,517		
S.P.C.						393,676	-	-	-	-	-	393,676		
SCCS										32,951	-	32,951		
Sub Total	120,076	1,273,635	4,936,395	2,885,630	12,485,712	12,732,523	3,133,819	3,133,819	3,133,819	3,133,819	20,497,992	17,477,290		
Physical contingency			12,008	127,263	475,638	288,563	1,268,571	1,273,232	313,582	58,330	2,049,799	1,747,728		
Consultant fee	105,040	211,948	210,154	423,973	315,234	453,461	210,157	206,473	-	-	840,633	1,695,893		
Grand Total	105,040	211,948	367,262	1,824,971	5,567,261	6,027,654	13,944,460	14,212,244	3,649,401	644,052	23,388,424	20,920,911		

Notes: Same as ANNEX Table 6-1

(2) Recurrent Costs After Price Adjustment
 - Local Currency only -

(1000 Rp)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
C.S.F., M.S.F.		53,429	187,461	215,581	247,893	285,016
F.S. production	-	2,446	2,812	3,234	3,719	4,275
S.S. production	-	-	50,739	58,350	67,096	77,144
Running costs	-	-	67,230	77,314	88,902	102,215
Staff's wages	-	50,983	66,680	76,683	88,176	101,382
S.P.C.				231,865	1,004,733	1,155,192
Operation	-	-	-	-	738,115	848,648
Staff's wages	-	-	-	231,865	266,618	306,544
Seed Control		1,110	1,277	1,468	4,293	4,936
Operation	-	1,110	1,277	1,468	1,688	1,941
SCCS	-	-	-	-	2,605	2,995
Sub-total	-	54,539	188,738	448,914	1,256,919	1,445,144
Physical Contingency	-	5,454	18,874	44,891	125,692	144,514
Grand Total	-	59,993	207,612	493,805	1,382,611	1,589,658

(3) Cost of Local Training After Price Adjustment
 - Local Currency only - (1000 Rp)

	Year 1		Year 2		Year 3		Year 4		Year 5		Total
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	
Local Training	30,809	-	35,448	-	40,260	-	45,727	-	52,582	-	204,826
Total	30,809	-	35,448	-	40,260	-	45,727	-	52,582	-	204,826

(4) Costs of Central Seed Cold Storage After Price Adjustment
 (1000 Rp)

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign
Investment costs	-	-	-	-	2,362	62,904	-	-	-	-	-	-
Rehabilitation of Building	-	-	-	-	1,824	-	-	-	-	-	-	-
Equipments	-	-	-	-	538	62,904	-	-	-	-	-	-
Recurrent costs	-	-	-	-	1,638	-	1,884	-	2,166	-	2,490	-
Operation	-	-	-	-	1,638	-	1,884	-	2,166	-	2,490	-
Physical Contingency	-	-	-	-	400	6,290	188	-	217	-	249	-
Consultant fee	-	-	-	-	2,232	5,025	-	-	-	-	-	-

Table 6 - 3 Working Capital for E.S.

	Requirement quantity of collection 1987 - 8 (Ton)	Producer's price of seed (Rp)	Amount (1,000 Rp)
Aceh	3,813	155,000	591,015
S. Sumatera	3,608	"	559,240
Lampung	3,895	"	603,725
Total	11,316	"	1,753,980

Seed price is estimated as 110% of ordinary paddy price
(155 Rp/kg)

Table 7 - 1 Forecasted Planted Acreage of Improved and Local Varieties of Rice in Target Year

	Lowland rice			Upland rice			Tidal rice		
	Improved variety	Local variety	Total	Improved variety	Local variety	Total	Improved variety	Local variety	Total
Aceh	182,781	136,298	319,079	-	35,970	35,970	-	-	-
S.Sumatara	137,251	63,705	200,956	-	109,738	109,738	30,393	46,495	76,888
Lampung	210,847	60,330	271,177	-	97,800	97,800	-	-	-
Total	530,879	260,333	791,212	-	243,508	243,508	30,393	46,495	76,888

(ha)

Note: The acreage is estimated at basing on existing acreage in 1980.

15 - 30% of existing acreage of local varieties would be changed into improved varieties by 1988.

200,956 ha for lowland rice in S. Sumatara contains 122,577 ha shared by Belitung S.P.C. Therefore, the estimated rice planted area for the project is only 78,379 ha (Tugu Mulyo) excluding above 122,577 ha. 78,379 ha is the total of 53,454 ha for improved varieties and 24,925 ha for local varieties.

Table 7 - 2 Incremental Paddy Amount after Target Year Annual

	Lowland rice	Upland rice	Tidal rice	Total
Aceh	177,187	10,791	-	187,978
S. Sumatera	39,526	76,816	49,534	165,876
Lampung	107,363	88,020	-	195,383
Total	324,076	175,627	49,534	549,237

Note: The incremental production amounts are estimated based on data of Annex Table 7-1 and present yield and expected yield.

Table 7 - 3 Incremental Gross and Net Returns of Project

(1) Gross Returns(annual) (Million Rp.)

	Lowland rice	Upland rice	Tidal rice	Total
Aceh	26,170	1,594	-	27,764
S. Sumatera	5,838	11,346	7,316	24,500
Lampung	15,857	13,000	-	28,858
Total	47,865	25,940	7,316	81,122

(2) Net Returns (annual) (Million Rp.)

	Lowland rice	Upland rice	Tidal rice	Total
Aceh	14,812	531	-	15,343
S. Sumatera	3,006	3,426	3,263	9,695
Lampung	7,833	3,926	-	11,759
Total	25,651	7,883	3,263	36,797

Note: Paddy price in 1988 - 89 is 147.7 Rp/kg.

Table 7 - 4 Shadow Price of Paddy Based on 1980 Constant Price

	(US\$/ton)	(Rp/ton)
Export price Thai, 5% broken F.O.B.	551	344,000
Indonesian import price	496	310,000
+ freight and insurance	20	13,000
Price at Indonesian Port	516	323,000
+ Port handling	6	4,000
+ transport to wholesaler	10	6,000
price at wholesales	532	333,000
- transport, mill to wholesaler	10	6,250
Ex-mill price	522	326,250
paddy equivalent	328	205,000
- milling costs (- value of by products)	10	6,250
- transport, farm to mill	17	10,625
- dealer's margin	20	12,500
Farm - Gate price of paddy	281	175,000

Note: Convert rate of RP and US\$; 1 US\$ = 625 RP (in 1980)

Table 7 - 5 Floor Price of Rice in Indonesia

	(Rp/kg)	
	Paddy	Milled rice
1974-75	41.8	68.5
1975-76	58.5	97.0
1976-77	68.5	108.0
1977-78	71.0	110.0
1978-79	75.0	119.5
1979-80	90.0	151.5
1980-81	105.0	175.0
1981-82	112.0	
1982-83	110.3	
1983-84	115.8	
1984-85	121.5	
1985-86	127.6	
1986-87	134.0	
1987-88	140.7	
1988-89	147.7	

Note:
Paddy price is forecasted with 5% of annual escalation.

Table 7 - 6 Production Costs and Ratio of Return of Paddy

(1) 水 稻
(1) Lowland Rice

	Pre-project		Post-project
	Local variety	Improved variety	
Seed (Rp/ha)	8,000	6,250	6,250
Fertilizer (Rp/ha)	21,000	30,000	30,000
Chemical (Rp/ha)	4,500	5,000	5,000
Labor (Rp/ha)	165,000	200,000	210,000
Miscellaneous (Rp/ha)	5,000	12,000	12,000
Total (Rp/ha)	203,500	253,250	263,250
Yield (ton/ha)	3.20	4.50	4.50
Gross return (Rp/ha)	464,000	607,500	607,500
Net return (Rp/ha)	260,500	354,250	344,250
Ratio of return (%)	56.1	58.3	56.6

- Note: 1. Seed: Local variety.....40 kg/ha 200 Rp/kg
Improved variety.....25 kg/ha 250 Rp/kg
2. Estimated from data provided by Agricultural Service, Aceh Province.
3. Paddy price: Local variety 145 Rp/kg
Improved variety 135 Rp/kg

(2) Upland Rice

	Pre-project	Post-project
	Local variety	Improved variety
Total production	123,900	199,500
cost (Rp/ha)		
Seed (Rp/ha)	10,000	9,400
Yield (ton/ha)	1.50	2.20
Gross return (Rp/ha)	225,000	286,000
Net return (Rp/ha)	101,100	86,500
Ratio of return (%)	44.9	30.2

Paddy price
Local variety 150 Rp/kg
Improved variety 130 Rp/kg

Post project: Seed rate 40 kg/ha
Seed price 250 Rp/kg
Pre project : Unknown

(3) Tidal Rice

	Pre-project	Post-project
	Local variety	Improved variety
Total production	164,175	222,990
cost (Rp/ha)		
Seed (Rp/ha)	8,000	7,500
Yield (ton/ha)	2.10	3.10
Gross return (Rp/ha)	315,000	403,000
Net return (Rp/ha)	150,825	180,010
Ratio of return (%)	47.8	44.6

Paddy price
Local variety 150 Rp/kg
Improved variety 130 Rp/kg

Table 7 - 7 Benefit and Costs

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Costs	347.4	2,242.4	9,422.8	28,496.1	5,228.6	2,242.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7
Investment costs	347.4	7,702.4	9,615.2	28,202.3	4,146.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Resourcer costs	0	60.0	207.6	493.8	1,282.6	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7	1,509.7
Training	30.8	35.4	40.2	45.7	51.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Working Capital for 65	-	-	-	-	-	1,723.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits																				
Incremental	0	0	0	0	0	143.1	344.1	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2
Fixed amount 1900 use	0	0	0	0	0	12,244.0	24,521.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0
Net Value of benefits	0	0	0	0	0	12,244.0	24,521.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0	24,797.0
Balance	347.4	2,242.4	9,422.8	28,496.1	5,228.6	8,725.3	22,941.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3	33,207.3

Note: IRR = 36.5%

Sensitivity analysis with 30% increase in costs of investment 31%

20% decrease in benefits..... 30%

Investment costs include local training cost.

Δ = minus

Table 7 - 8 Financial Analysis of Seed Processing Center

	(Rp/ ton)
I. Payment for seeds purchased	125,200
Purchasing price of extension seed	121,080
Supervising cost of harvesting	690
Transportation cost from field to factory	580
Indirect cost	2,920
II. Processing and packing cost	40,020
Processing	5,760
Packing	22,590
Indirect cost	11,670
Depreciation	8,620
Salaries etc.	3,050
III. Total cost = I + II	165,220
Purchased amount 265,202 kg	
Packed seed 189,200 kg	
Yielding percentage $189,200/265,202=0.713$	
IV. Cost of Seeds Products..... $165.22/0.713=231.73/kg$	
Second grain $14.059 kg \times 140 Rp = 1,968,260$	
(price 80% of floor rice price 175 Rp)	
V. Net cost of seeds products..... $221.19/kg$ (less second grain value)	
VI. Selling price of seeds 185/kg, 210/kg ...by government	
VII. Deficit $221.19 - 185 = 36.19/kg$	
$221.19 - 210 = 11.19/kg$	

Table 7 - 9 Cost Estimation for Seed Processing (an example)
(Lampung Branch of San Hyan Seri)

* Wonodadi (Lowland rice)	Purchased amounts of seed	1,100t (Rp 125/kg)	Rp 125,000/ton
		1,100t x Rp 125,000/t	= Rp 137,500,000/year
	Processed Seed amounts	880t	
* Tanjung-Iman (Upland rice)	Purchased amounts of seed	1,695t	
		1,695t x Rp 125,000/t	= Rp 211,875,000/year
	Processed seed amount	1,180t	

Costs	Wonodadi		Tanjung - Iman	
	Total costs (1,000 Rp)	Costs of pro- cessed seed (Rp/ton/Year)	Total costs (1,000 Rp)	Costs of pro- cessed seed (Rp/ton/Year)
A. Investment Costs	1,776,887	134,612	3,115,209	176,000
B. Running Costs				
Staff's Cost	9,102	10,343	13,652	11,569
Worker's Cost	2,256	2,563	3,762	3,188
Transportation	720	818	2,160	693
S.P.C. Running Costs	6,250	7,102	6,460	5,474
Fumigant	324	368	437	370
Packing	26,080	29,636	35,100	29,745
Vehicles(Jeep,Bike)	648	736	648	549
Total	45,380	51,566	62,219	51,588