In Trimurjo farmers are comparatively interested in mechanization. Farmers have interests on introduction of manual tools and facilities such as sickles, pedal threshers and concrete floors as well as machines such as rice mills, power threshers and mechanical dryers.

2. EXTENSION WORKERS' INTERVIEW SURVEY

Interview survey was conducted on the extension workers (PPLs), who are the staff of the Rural Extension Centers (BPPs) and usually make contact with farmers directly at field level. The extension workers in charge of food crops were selected as respondents. The survey was carried on about their extension activities, training programs and knowledge on post harvest technology.

Table V 2-1 shows the kinds of extension subject they ever extended to the farmers. The stress is put on farming practice of paddy, application of farm inputs and SUPPA INSUS in general in all the areas. The guidance on saving of post harvest loss is widespread in Karawang (West Jawa), Nganjuk (East Jawa), Pinrang (South Sulawesi) and Trimurjo (Lampung).

Table V 2-2 gives the training program the extension workers recently received. The training programs differ among Rural Extension Centers. The emphasis is laid on farming practice, fishery and livestock in Karawang (West Jawa). The training on crop protection is dominant in Subang (West Jawa) and Sidrap (South Sulawesi), and the training on fertilizer application is prevalent in Subang (West Jawa) and Nganjuk (East Jawa).

The questionnaire form used for this survey is shown in Attachment I.

3. CASE STUDY OF ADVANCED FARMER GROUPS

3.1 General

This chapter comprises the case studies on the advanced farmer groups and laborer group activities. Progressive activities i.e. joint post harvest and marketing activities by farmer groups, have not been done in the survey areas, hence the Study Team studied these activities of advanced groups in the out of the survey areas. The study results were used for the formulation of future farmer group organization and activities in the pilot plan.

3.2 Hadi Makmur Farmer Group

3.2.1 Genaral

Hadi Makmur farmer group has been organized in Kecamatan Metro Kota, Kabupaten Central Lampung since 1973. This group consists of 56 members holding all together 95 ha of paddy field. Paddy fields are developed on a slightly sloping land under Way Sekampung Irrigation System. The padd fields in this group is located in the same tertiary irrigation block. The establishment of this is summarized as follows:

1.	Total Paddy Area		95 ha
2.	No. of Member		56
	- Key Farmer		1
	- Progress Farmer		10
	- Follower		45
3.	Average holding Size		1.7 ha
4.	Groups Facilities	Unit	Capacity/Size
	- Rice Mill	2	360 kg/hr (18-HP), 500 kg/hr (24-HP)
	- Hand tractor	3	-
	- Winnower	2	-
	- Mist blower	1	-
	- Power thresher	1	-
	- Pedal thresher	4	-
	- Hoe	20	-
	- Sickle	20	-
	- Weeding tool	15	-
	- Pest trap tool	1	-
	- Concrete Floor	3	112 m^2, 128 m^2, 480 m^2

3.2.2 Organization

This group is managed by 5 key staffs, i.e. one chief farmer/chairman group (key farmer), one deputy/vice chairman, two secretaries and one treasurer. The the following five (5) sections for management of group activities are organized and managed by 5 key staffs.

Section	Section Chief
1. Water user's association (P3A)	Chairman (Key farmer)
2. Economic and management	Treasurer
3. Plant protection	Deputy/rice chairman
4. Land preparation	Secretary
5. Farm inputs	Secretary

This farmers' groups are divided into four sub-groups in order to facilitate close coordinations among the members. Each sub-group is managed by chief of sub group in line with the general policy of the group. The number of members in each sub group is as follows:

1.	Hadi Makmur I	=	17 members
2.	Hadi Makmur II	=	13 members
3.	Hadi Makmur III	=	10 members
4.	Hadi Makmur IV	=	16 members

3.2.3 Activities

(1) Meeting and Election

The regular meetings are conducted at least once in a month. All members are expected to attend the meeting. Any members can talk their constraints or suggestions.and the meetings are holding in good atmosphere. It is easy to get members' concensus through the meetings which could strengthen group activities.

Election for key staffs is conducted once in two years. The decision of election is usually taken by acclamation in good atmosphere.

This system could be taken because of a good performance of the elected persons and their high trusts from members.

(2) Planning

The group makes annual and seasonal plans. Each sub-group prepares a group schedule on the basis of annual and seasonal plans discussed at the meeting. Annual and seasonal plans consist of the following contents:

1) Water Management
   - Water distribution by sub-group
   - Maintenance and repair of tertiary canals

2) Farming Activities
   - Land preparation by hand tractors
   - Group nursery preparation
   - Transplanting and harvesting by arranged laborers

3) Processing and Marketing
   - Operation of rice mill
   - Procurement of paddy
   - Distribution of rice

4) Finance
   - Balance sheet of rice mill operation and custom services on hand tractors.

(3) Farming Activities

Farming activities are scheduled on the basis of water distribution schedule. Paddy fields of each sub-group are located at same plot under the tertiary irrigation block of 95 ha. Members of each sub-group are well coordinating together according to the schedule.

Nurseries of around 1.2 ha are made by each sub-group. Group nursery preparation makes easy to uniform variety and quality of seeds and to keep cropping schedule. Land preparation is done by three (3) hand tractors holding by the group. These tractors are operated by eight (8) members according to the land preparation schedule. Custom charge for

land preparation is decided at Rp 85,000/ha. The rest of charges except operating costs for tractors is saved for replacement or purchase of new tractors.

Transplanting is done by nine (9) groups which are mainly organized by group members and consist of 15 women and 2 men per group. Farmers are harvesting paddy under Gropyokan system of which share is 1/6. Labor shortage for harvesting is very rare due to the scheduled cropping and arrangement of laborers in and out of the members.

(4) Processing and Marketing

Most of members are milling paddy in the group's two (2) rice mills. Custom milling charge, which is Rp. 30/kg of rice for members and Rp 35/kg of rice for non-members, is collected and saved in the group's accounts. The group sells around 100 ton of rice by season to KUD Metro Kota.

(5) Financial Management

The group has a group saving account collecting from members. This account is used mainly for operating cost.

Financial report is prepared and submitted to the monthly regular meeting by the treasurer. All members can know the financial condition of the group. Profits of group activities are distributed to all members equally on the basis of the annual financial balance sheet prepared in every December. Each member got Rp. 100,000 and 50 kg of rice in December, 1988.

3.2.4 Group Investment

The first tractor was introduced under "Tani Makmur Project" in 1974. The group operated the tractor in the paddy fields of about 20 ha. The custom charge at that time was Rp. 42,000/ha. The capital accumulation except operating costs and repayments became Rp 1,000,000 after three (3) years' operation.

In the year 1985, the Group got the revolving funds for introduction the second hand tractor. The amount was Rp 1,771,200 and interest rate of 3%/year and repayment period of 5 years were applied. The group bought the third tractor by cash (Rp 2,850,000) from a private dealer in 1986. The capital accumulation from three tractors' operation became Rp 2,300,000 in the end of 1989.

The first rice mill was also purchased under "Tani Makmur Project" in 1979. The credit amount was Rp 1,792,350. After five (5) years' operation, the group can save the capital in order to buy an additional rice mill of which price was Rp 4,792,000 in 1984.

3.3 AGRICULTURAL LABORER GROUPS IN EAST JAVA AND WEST JAVA

3.3.1 Groups in East Java

In Ngawi, East Java, the contract harvesting by agricultural laborer groups is popular. The contract includes reaping and threshing. The reaping is done by sickles. The threshing is done by pedal threshers which were made by laborers themselves at a cost of 20,000 to 30,000 Rp/unit using part of bicycles. A laborer group normally consists of 5 members, 2 persons for transportation of paddy plants to a threshing and packing plot, 2 persons for operation of the thresher, 1 person for driving of the thresher. The capacity of a thresher is about 1.5 ton/day (10 to 15 hours) including reaping. The harvesting charge is normally 10% of the threshed paddy with meals, which cost about Rp 3,750/ 5 persons. The paddy price at the survey time was Rp 190/kg. The groups transmigrate between districts seeking customers. Working days of a group are estimated at 1 to 1.5 months in the wet season and 20 to 30 days in the dry season.

There are 576 agricultural laborer groups for the contract harvesting with pedal threshers in BPP Mardiasri area.

3.3.2 Groups in West Java

In Indonesia agricultural labourers' groups for transplanting of paddy are commonly observed. But those for harvesting are very rare. The

present study team happened to meet the agricultural labourers' groups for harvesting in West Java in 1989.

These group are in sub-village (Dusum) Krajan, village Pasir Mukti, sub-district Telagasari, district Karawang. Krajan has 3 harvesting groups consisting of 120 households which cover about 26% of the whole households (455 household) in Krajan. The groups were organized in 1986 under a guidance of the chief of the village to limit the participation of harvesters from other villages and to save harvesting losses caused by over population in harvesting. Ceblokan system is predominant in Krajan. The harvesters can get 1/6 of the total production as the harvesting charge from the landowners. A harvesting group consists of 2 units, i.e. labourers for reaping and labourers for threshing. The income is divided equally among members which lessens competition among members resulting in smaller harvesting losses.

Table V 1-1 RESULGS OF FARMERS' INTERVIEW SURVEY ON REAPING METHOD

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area	Season	Harvest by Ani-Ani	Harvest by Sickle		
					Lower Part	Middle Part	Upper Part
West Jawa	Karawang	Telagasari	Wet	2	98	0	0
			Dry	2	98	0	0
	Subang	Pagaden	Wet	0	100	0	0
			Dry	0	100	0	0
East Jawa	Nganjuk	Bagor	Wet	0	70	19	11
			Dry	0	80	18	2
	Banywangi	Rogjanpi	Wet	0	100	0	0
			Dry	0	100	0	0
South Sulawesi	Sidrap	Maritengae	Wet	3	95	0	2
			Dry	3	95	0	2
	Pinrang	Mattiro Bulu	Wet	0	100	0	0
			Dry	0	100	0	0
Lampung	Lampung Tengah	Trimurjo	Wet	0	82	18	0
			Dry	0	82	18	0
		Seputih Raman	Wet	2	94	0	4
			Dry	2	94	0	4

Source: Farmers' interview survey.

Table V 1-2 RESULGS OF FARMERS' INTERVIEW SURVEY ON HARVESTING SYSYTEM

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	Harvesting System			
				Gropyokan	Ceblokan	Tebasan	Self Harvest
West Jawa	Karawang	Telagasari	Wet	66	34	0	0
			Dry	66	34	0	0
	Subang	Pagaden	Wet	39	61	0	0
			Dry	39	61	0	0
East Jawa	Nganjuk	Bagor	Wet	98	0	0	2
			Dry	100	0	0	0
	Banywangi	Rogjanpi	Wet	7	0	43	50
			Dry	11	0	34	55
South Sulawesi	Sidrap	Maritengae	Wet	100	0	0	0
			Dry	100	0	0	0
	Pinrang	Mattiro Bulu	Wet	98	2	0	0
			Dry	98	2	0	0
Lampung	Lampung Tengah	Trimurjo	Wet	100	0	0	0
			Dry	96	0	4	0
		Seputih Raman	Wet	98	0	0	2
			Dry	94	0	4	2

Source: Farmers' interview survey.

Table V 1-3 RESULTS OF FARMERS' INTERVIEW SURVEY ON DISTANCE OF NEAREST THRESHING PLACE

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	On Farm	< 0.5km	0.6 - 2km	> 2km
West Jawa	Karawang	Telagasari	Wet	94	6	0	0
			Dry	94	6	0	0
	Subang	Pagaden	Wet	72	24	0	4
			Dry	74	24	0	2
East Jawa	Nganjuk	Bagor	Wet	60	7	5	28
			Dry	58	10	6	26
	Banywangi	Rogjanpi	Wet	82	18	0	0
			Dry	80	20	0	0
South Sulawesi	Sidrap	Maritengae	Wet	77	18	0	5
			Dry	74	18	0	8
	Pinrang	Mattiro Bulu	Wet	58	38	2	2
			Dry	58	38	2	2
Lampung	Lampung Tengah	Trimurjo	Wet	81	15	0	4
			Dry	81	15	0	4
		Seputih Raman	Wet	50	50	0	0
			Dry	47	53	0	0

Source: Farmers' interview survey.

Table V 1-4 RESULTS OF FARMERS' INTERVIEW SURVEY ON THRESHING METHOD

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	Trampling	Beating	Striking by Stick	Pedal Thresher
West Jawa	Karawang	Telagasari	Wet	0	100	0	0
			Dry	0	100	0	0
	Subang	Pagaden	Wet	0	100	0	0
			Dry	0	100	0	0
East Jawa	Nganjuk	Bagor	Wet	12	32	7	49
			Dry	17	14	0	69
	Banywangi	Rogjanpi	Wet	0	100	0	0
			Dry	0	100	0	0
South Sulawesi	Sidrap	Maritengae	Wet	0	94	0	6
			Dry	0	96	0	4
	Pinrang	Mattiro Bulu	Wet	0	100	0	0
			Dry	0	100	0	0
Lampung	Lampung Tengah	Trimurjo	Wet	4	70	2	24
			Dry	4	70	2	24
		Seputih Raman	Wet	2	8	0	90
			Dry	0	8	0	92

Source: Farmers' interview survey.

Table V 1-5 RESULTS OF FARMERS' INTERVIEW SURVEY ON WINNOWING METHOD

(Unit: %)

Province	Kabupaten	Kecamatan (preliminary Survey Area)	Season	Natural Wind	Winnower	Power Winnower	Total
West Jawa	Karawang	Telagasari	Wet	89	2	9	100
			Dry	89	2	9	100
	Subang	Pagaden	Wet	82	18	0	100
			Dry	82	18	0	100
East Jawa	Nganjuk	Bagor	Wet	11	89	0	100
			Dry	16	84	0	100
	Banywangi	Rogjanpi	Wet	51	23	26	100
			Dry	50	20	30	100
South Sulawesi	Sidrap	Maritengae	Wet	95	2	3	100
			Dry	95	2	3	100
	Pinrang	Mattiro Bulu	Wet	100	0	0	100
			Dry	100	0	0	100
Lampung	Lampung Tengah	Trimurjo	Wet	83	15	2	100
			Dry	85	13	2	100
		Seputih Raman	Wet	83	17	0	100
			Dry	81	19	0	100

Source : Farmers' intervies survey.

Table V 1-6 RESULTS OF FARMERS' INTERVIEW SURVEY ON DRYING AND STORAGE METHOD

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	Drying		Storage	
				Sunshine	Mechanical Dryer	Bag or Rice Chest	Warehouse
West Jawa	Karawang	Telagasari	Wet	100	0	92	8
			Dry	100	0	73	27
	Subang	Pagaden	Wet	100	0	90	10
			Dry	100	0	90	10
East Jawa	Nganjuk	Bagor	Wet	100	0	80	20
			Dry	100	0	77	23
	Banywangi	Rogjanpi	Wet	100	0	75	25
			Dry	100	0	73	27
South Sulawesi	Sidrap	Maritengae	Wet	100	0	97	3
			Dry	100	0	97	3
	Pinrang	Mattiro Bulu	Wet	100	0 0	80	20
			Dry	100	0 0	80	20
Lampung	Lampung Tengah	Trimurjo	Wet	100	0	76	24
			Dry	100	0	76	24
		Seputih Raman	Wet	100	0	74	26
			Dry	100	0	80	20

Source : Farmers' interview survey.

Table V 1-7 RESULTS OF FARMERS' INTERVIEW SURVEY ON SELLING TIME AND MARKET OUTLET

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	Selling Time after Harvest		Market Outlet			
				within 2 weeks	after 2 weeks	KUD	Middle-man	Private Miller	Retailer
West Jawa	Karawang	Telagasari	Wet	79	21	35	19	23	23
			Dry	82	18	33	24	23	20
	Subang	Pagaden	Wet	33	67	0	56	13	31
			Dry	28	72	0	53	12	35
East Jawa	Nganjuk	Bagor	Wet	68	32	42	28	0	30
			Dry	50	50	48	29	0	23
	Banywangi	Rogjanpi	Wet	98	2	7	15	78	0
			Dry	98	2	6	20	74	0
South Sulawesi	Sidrap	Maritengae	Wet	98	2	37	7	53	3
			Dry	100	0	38	7	53	2
	Pinrang	Mattiro Bulu	Wet	87	13	35	33	25	7
			Dry	91	9	27	34	29	10
Lampung	Lampung Tengah	Trimurjo	Wet	47	53	2	32	60	6
			Dry	72	28	0	33	60	7
		Seputih Raman	Wet	78	22	0	36	26	38
			Dry	72	28	0	37	23	40

Source : Farmers' interview survey.

Table V 1-8 RESULTS OF FARMERS' INTERVIEW SURVEY ON REASON FOR LOW PADDY PRICE

(Unit: %)

Province	Kabupaten	Kecamatan (Preliminary Survey Area)	Season	High Moisture	High Broken	High Impurity	Over Supply	Others
West Jawa	Karawang	Telagasari	Wet	84	0	0	16	0
			Dry	76	6	0	18	0
	Subang	Pagaden	Wet	59	8	25	8	0
			Dry	42	17	33	8	0
East Jawa	Nganjuk	Bagor	Wet	100	0	0	0	0
			Dry	100	0	0	0	0
	Banywangi	Rogjanpi	Wet	43	25	18	11	3
			Dry	25	13	56	0	6
South Sulawesi	Sidrap	Maritengae	Wet	62	9	18	11	0
			Dry	69	7	22	2	0
	Pinrang	Mattiro Bulu	Wet	93	2	5	0	0
			Dry	74	3	23	0	0
Lampung	Lampung Tengah	Trimurjo	Wet	70	3	10	17	0
			Dry	67	10	10	13	0
		Seputih Raman	Wet	72	0	15	13	0
			Dry	71	3	23	3	0

Source : Farmers' interview survey.

Table V 1-9 RESULTS OF FARMERS' INTERVIEW SURVEY ON QUALITY AND SOURCE OF FARMERS' PADDY SEED

(Unit : %)

Province	Kabupaten	Kecamatan (Preliminary (Survey Area)	Season	Quality of Seed				Source of Seed		
				Certified	Good	Ordinary	Unknown	Own	KUD	Private
West Jawa	Karawang	Telagasari	Wet	98	0	2	0	2	98	0
			Dry	98	2	0	0	2	98	0
	Subang	Pagaden	Wet	34	16	14	36	30	34	36
			Dry	32	24	18	26	38	32	30
East Jawa	Nganjuk	Bagor	Wet	98	0	0	2	0	98	2
			Dry	59	4	7	30	0	59	41
	Banywangi	Rogojampi	Wet	6	2	0	92	4	6	90
			Dry	8	2	2	88	4	8	88
South Sulawesi	Sidrap	Maritengae	Wet	75	9	8	8	14	75	11
			Dry	75	9	8	8	13	75	12
	Pinrang	Mattiro Bulu	Wet	90	4	2	4	5	90	5
			Dry	80	4	7	9	7	80	13
Lampung	Lampung Tengah	Trimurjo	Wet	62	0	2	36	9	62	29
			Dry	62	0	2	36	9	62	29
		Seputih Raman	Wet	76	2	0	22	6	76	18
			Dry	63	13	0	24	9	63	28

Source : Farmers' interview survey

Table V 1-10 FARMERS' HOLDING OF AGRICULTURAL MACHINE AND EQUIPMENT

(Unit : %)

Province/Kabupaten/ (Preliminary Survey Area)		Hand Tractor	Sprayer	Pedal Thresher	Power Thresher	Trailer Tractor	Drying Floor	Rice Mill
West Jawa								
Karawang	Telagasari	0	0	0	0	0	3	0
Subang	Pagaden	0	20	0	0	0	4	0
East Jawa								
Nganjuk	Bagor	0	45	40	0	0	2	0
Banywangi	Rogjanpi	0	0	0	0	0	0	0
South Sulawesi								
Sidrap	Maritengae	2	0	0	0	0	0	4
Pinrang	Mattiro Bulu	6	81	0	0	0	0	2
Lampung								
Lampung Tengah	Trimurjo	0	0	4	0	0	40	0
	Seputih Raman	0	0	60	0	0	20	0

Source : Farmers' interview survey

Table V 1-11 FARMERS' PARTICIPATION TO ORGANIZATION

(Unit: %)

Province/Kabupaten/ (Preliminary Survey Area)		KUD	Supra Insus	Water Users' Association
West Jawa				
Karawang	Telagasari	90	96	88
Subang	Pagaden	58	65	14
East Jawa				
Nganjuk	Bagor	91	96	93
Banywangi	Rogjanpi	66	84	66
South Sulawesi				
Sidrap	Maritengae	85	86	89
Pinrang	Mattiro Bulu	81	91	81
Lampung				
Lampung Tengah	Trimurjo	74	83	34
	Seputih Raman	57	91	48

Source : Farmers' interview survey

Table V 1-12 FARMERS' INTENTION ON POST HARVEST & MARKETING (1/2)

(Unit:%)

	Tel.	Bag.	Mat.	Tri.
(1) Harvesting				
a. Problems on W.S.	92	100	100	96
- high density of rainfall	42	23	-	15
- paddy drying problem	28	-	-	64
- lack of man power	-	65	28	-
- not done on time (late)	-	33	33	-
- high degree of water content		-	12	-
b. Problems on D.S	16	0	4	10
- serrated sickle	10	-	-	-
c. Improved sickle	88	88	22	37
- to reduce the grain loss	60	50	-	-
- easy to use	-	28	-	20
d. Mechanic Harvester	22	18	39	44
- to speed up the process	10	-	19	36
e. Intention to reduce loss	94	68	76	88

	Tel.	Bag.	Mat.	Tri.
(2) Threshing/Winnowing				
a. Problems on W.S.	92	100	95	79
- high density of rainfall	30	-	63	-
- lack of facilities/tools	22	-	-	11
- rice pest	20	-	-	-
- lack of space	-	70	-	-
- lack of man power	-	41	-	-
- high moisture of rice	-	-	-	35
b. Problems on D.S	20	2	4	0
- lack of threshing space	10	-	-	0
c. Pedal thresher	92	82	16	45
- cheap price & low cost	52	-	-	-
- quick and easy to operate	16	59	-	33
- to reduce loss	-	-	11	-
d. Power thresher	6	25	82	46
- to speed up the process	-	-	28	33
- to reduce loss	-	-	49	-
e. Manual winnower	10	8	12	0
- to reduce loss	-	-	12	-
f. Power winnower	10	4	20	6
- to reduce loss	-	-	16	-
g. Intention to reduce loss	100	91	86	91

	Tel.	Bag.	Mat.	Tri.
(3) Drying				
a. Problems on W.S.	90	96	100	89
- shortage of sunshine	58	70	44	45
- Concrete floor not available/good	-	11	39	37
b. Problems on D.S.	2	2	15	7
- Concrete floor not available/good	-	-	11	-
c. Concrete floor	38	74	47	46
- to improve rice quality	16	15	-	-
- to speed up drying process	10	-	-	13
- easy to use and cheap	-	32	18	24
d. Mechanical dryer	68	9	52	52
- available without affective of climate	40	-	19	11
- to speed up drying process	10	-	-	33
- to keep/improve quality of paddy	-	-	14	-
e. Intention to reduce loss	88	94	62	83

Tel : Telagasari, Bag : Bagor, Mat : Mattiro Bulu, Tri : Trimurjo
Source: Farmers' interview

Table V 1-12 FARMERS' INTENTION ON POST HARVEST & MARKETING (2/2)

(Unit:%)

	Tel.	Bag.	Mat.	Tri.
(4) Carrying				
a. Problems on W.S	86	43	94	64
- road is muddy and bad	66	17	47	55
- lack and disadvantage of means	-	15	40	-
b. Problems on D.S	0	0	2	4
c. How to solve above problems	82	48	83	61
- road construction/improvement	70	22	65	45
- preparation of means	-	22	-	-
d. Intension to reduce loss	82	89	61	80
(5) Husking/Milling				
a. Problems on W.S	86	25	94	68
- rice becomes broken	26	-	19	31
- paddy is in semi-dried condition	38	22	56	-
- lack/damage on facilities	12	-	-	-
b. Problems on D.S	14	0	13	0
- broken rice	14	-	-	-
c. Powered huller	62	48	36	13
- to improve rice quality	32	-	16	-
- to reduce loss	10	-	-	-
- easy to use	-	24	-	-
- more efficient	-	15	-	-
d. Powered mill	58	35	51	61
- to improve rice quality	28	-	18	20
- more efficient	-	15	-	33
e. Intention to reduce loss	84	89	77	71

	Tel.	Bag.	Mat.	Tri.
(6) Storage				
a. Problems on W.S	90	84	95	81
- highmoisture (cause of yellow rice)	34	15	16	35
- lack of warehouse	38	57	53	-
- pests and rats	12	-	15	35
b. Problems on D.S	30	0	13	11
- pests and rats	30	0	10	10
c. How to improve	100	92	83	74
- warehouse sanitation	20	-	-	-
- construction of warehouse	32	59	68	24
- to fight pests and rats	38	13	-	35
- preparation of facilities/ tools	10	-	-	13
(7) Marketing Information				
a. Necessity of following services				
- Carrying service	36	57	91	43
- Deffusion of current market price	100	98	91	80
- Common storage facility	34	89	88	51
b. Way how to get infomation of paddy/rice seling price at present				
- Through neighbor	66	-	-	24
- Through radio	48	-	-	71
- Through middleman	16	-	-	27
- Others	14	-	-	24
- Not at all	0	-	-	0

	Tel.	Bag.	Mat.	Tri.
c. Way how to get infomation of second crops seling price at present				
- Through neighbor	26	-	-	22
- Through radil	58	-	-	60
- Through middleman	16	-	-	29
- Others	16	-	-	11
- Not at all	0	-	-	0
d. Frequenfy to get information				
- Every day	38	-	-	22
- once a week	46	-	-	36
- Once a month	8	-	-	36
- Others	16	-	-	24
(8) Necessity of services, etc.				
a. Farmer association	96	89	86	91
- to spread the technology	40	-	-	11
- to speed up the work	14	-	17	-
- to get official information	-	-	-	18
- to manage existing tools	-	41	11	-
- to keep a good cooperation	-	-	21	29
b. Government service	96	88	86	81
- to guarantee the existing continuity of tools	-	-	12	35
- Farmer needs guidance	14	52	44	31
c. Training and demonstration	92	92	83	
- to improve farmer's skill	60	83	54	62
- easy to understand	-	-	-	13
d. Service center	90	93	87	94
- easy to get service	-	67	-	71
- to improve farmer's skill	-	11	65	15
- to help farmer's communication	-	-	11	-

Tel : Telagasari, Bag : Bagor, Mat : Mattiro Bulu, Tri : Trimurjo
Source: Farmers' interview

Table V.2-1 EXTENSION SUBJECT BY EXTENSION WORKERS

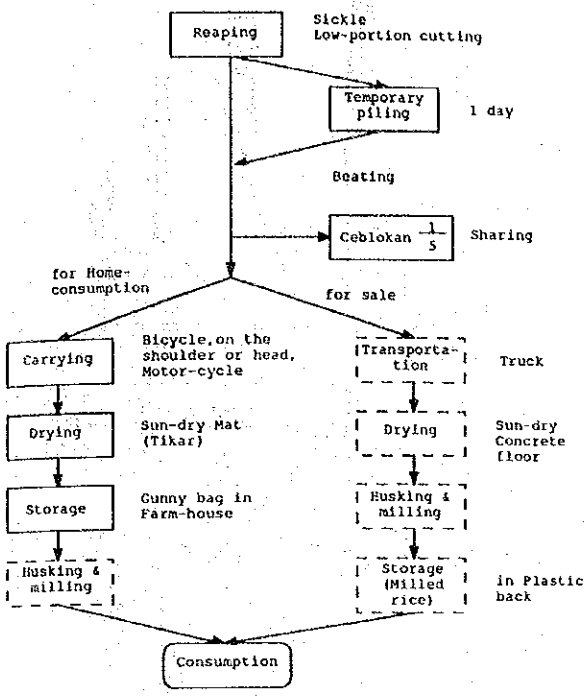
Extension Items	WEST JAWA				EAST JAWA				SOUTH SULAWESI				LAMPUNG				Average	
	Karawang		Subang		Banywangi		Nganjuk		Sidrap		Pinrang		Trimurjo		Seputih Raman			
	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%
1. Training on Farming Practice																		
-Farming practice of paddy	10	77	5	36	6	67	16	100	13	76	13	62	9	64	3	23	75	64
-Application of fertilizer	13	100	11	79	9	100	16	100	16	94	21	100	14	100	9	69	109	93
-Application of weedicide	11	85	7	50	8	89	8	50	13	76	19	90	13	93	7	54	86	74
-Application of pesticide	13	100	13	93	8	89	16	100	15	88	20	95	14	100	9	69	108	92
-Application of fungicide	13	100	3	21	5	56	14	88	4	24	11	52	10	71	3	23	63	54
2. Instruction of Agricultural Mechanization																		
-Pre-harvest mechanization	0	0	0	0	0	0	12	75	2	12	4	19	1	7	0	0	19	16
-Post-harvest mechanization	2	15	0	0	3	33	15	94	7	41	8	38	0	0	0	0	35	30
3. Guidance of Budgetary Management																		
-SUPRA INSUS farmer group	1	8	0	0	1	11	12	75	3	18	6	29	3	21	1	8	27	23
-Farmer group	5	38	0	0	2	22	15	94	6	35	9	43	7	50	1	8	45	38
-Individual farmer	2	15	0	0	0	0	6	38	3	18	2	10	2	14	0	0	15	13
4. Extension of Post Harvest Technology																		
-Timely harvesting of paddy	8	62	3	21	1	11	12	75	6	35	9	43	3	21	1	8	43	37
-Marketing strategy	7	54	0	0	1	11	10	63	3	18	8	38	6	43	1	8	36	31
-Saving of post harvest loss	12	92	8	57	5	56	14	88	13	76	18	86	14	100	6	46	90	77
5. Mass Guidance																		
-INSUS	5	38	3	21	4	44	11	69	7	41	17	81	5	36	4	31	56	48
-SUPRA INSUS	13	100	11	79	9	100	16	100	15	88	21	100	14	100	10	77	109	93
Total	13		14		9		16		17		21		14		13		117	

Remark: E.W=Extension workers
Source: Extension workers' interview survey

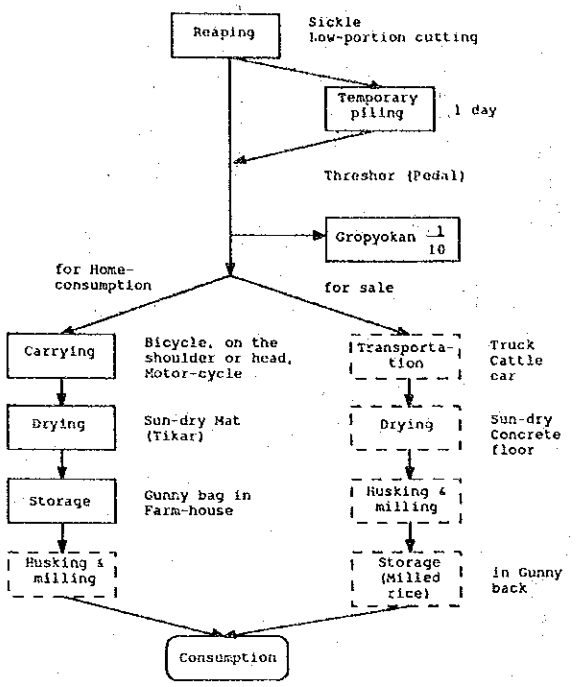
Table V.2-2 TRAINING PROGRAM RECEIVED BY EXTENSION WORKERS

Training program	WEST JAWA				EAST JAWA				SOUTH SULAWESI				LAMPUNG				Average	
	Karawang		Subang		Banywangi		Nganjuk		Sidrap		Pinrang		Trimurjo		Seputih Raman			
	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%	No.of E.W.	%
1. SUPRA INSUS program	0	0	0	0	1	6	0	0	3	18	5	24	0	0	5	38	14	12
2. Crop Protection	1	8	12	86	0	0	2	22	15	88	8	38	4	29	1	8	43	37
3. Organization	0	0	2	14	0	0	0	0	2	12	19	90	0	0	0	0	23	20
4. Extension Technology	0	0	0	0	0	0	0	0	5	29	0	0	0	0	0	0	5	4
5. Post Harvest Technology	2	15	1	7	0	0	1	11	0	0	0	0	2	14	0	0	6	5
6. Farming Practice	12	92	0	0	0	0	1	11	5	29	5	24	0	0	0	0	23	20
7. Fishery	12	92	0	0	0	0	0	0	0	0	5	24	0	0	0	0	17	15
8. Livestock	12	92	0	0	0	0	0	0	0	0	0	0	1	7	3	23	16	14
9. Perennial Crops	0	0	0	0	0	0	0	0	0	0	4	19	0	0	6	46	10	9
10.Horticulture	0	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	1	1
11.Irrigation	0	0	0	0	0	0	0	0	2	12	0	0	4	29	0	0	6	5
12.Mechanization	0	0	0	0	0	0	0	0	0	0	0	0	1	7	1	8	2	2
13.Fertilizer Application	1	8	14	100	9	56	9	100	0	0	0	0	8	57	0	0	41	35
14.Comunication System	0	0	0	0	0	0	0	0	0	0	0	0	7	50	0	0	7	6
15.Credit	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	1	1
Total	13		14		16		9		17		21		14		13		117	

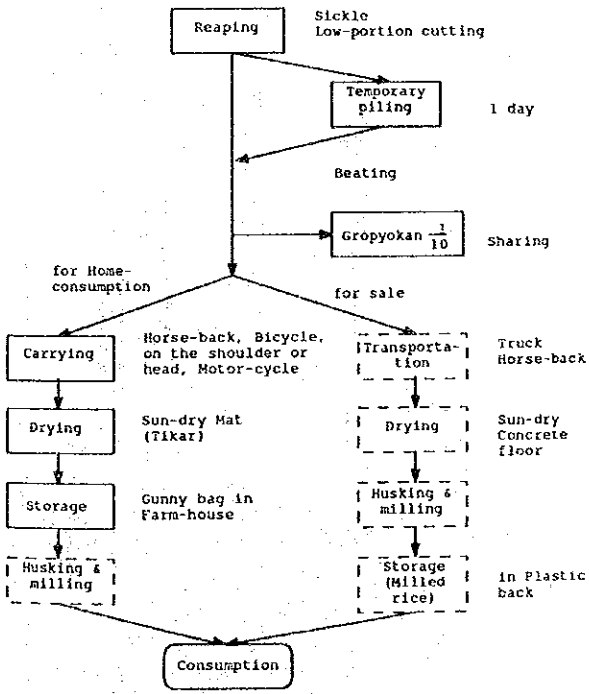
Remark: E.W=Extension workers
Source: Extension workers' interview survey



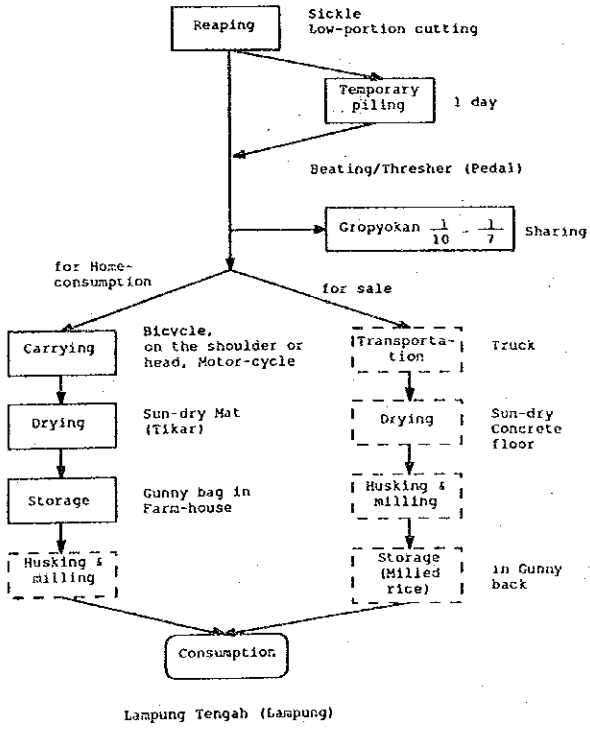
Subang (West Java)



Bagor (East Java)



Sidrap (South Sulawesi)

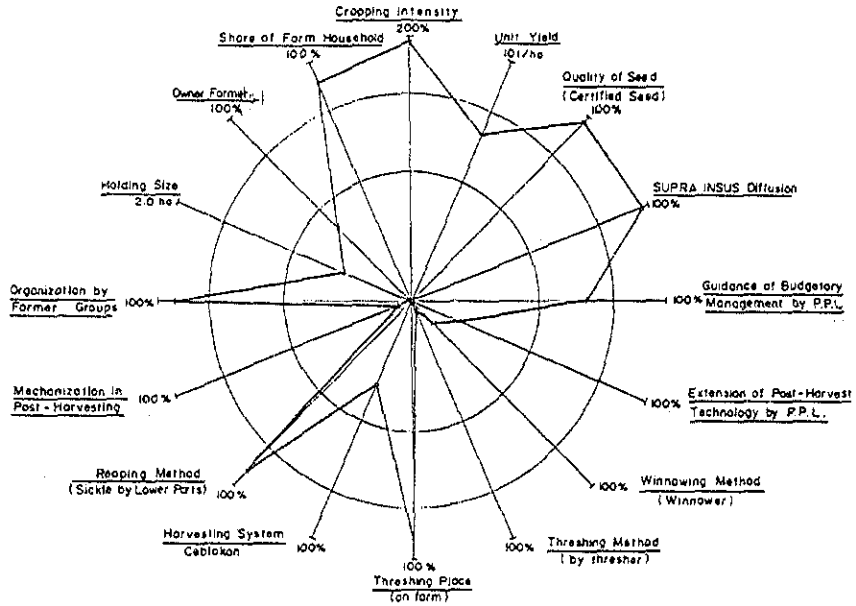


Lampung Tengah (Lampung)

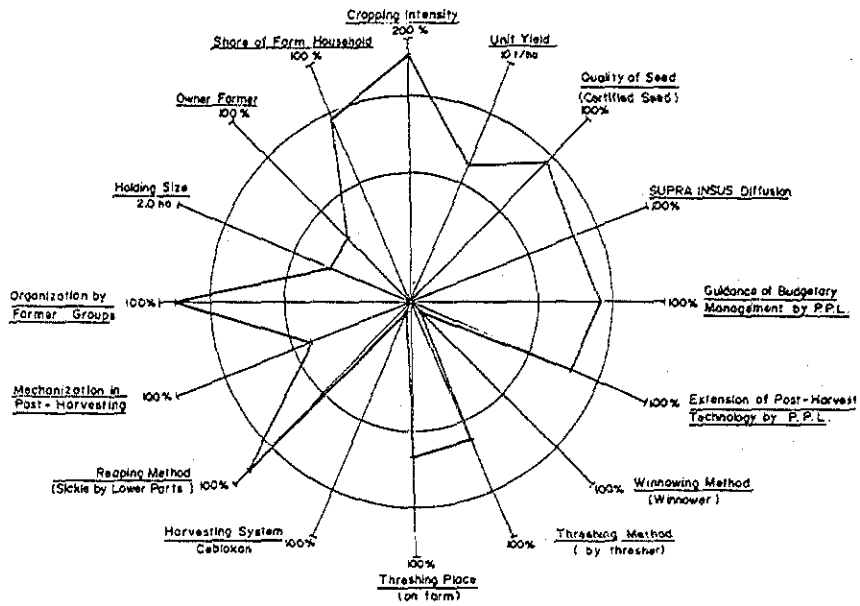
Farmer's work

Private Trader/KUD, DOLOG

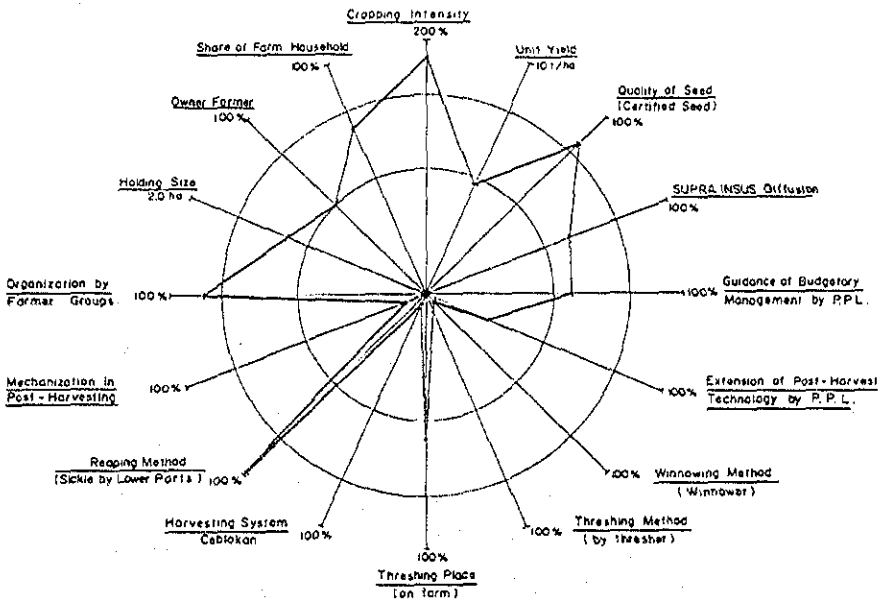
Fig. V 1-1 MAJOR POST HARVEST ACTIVITIES



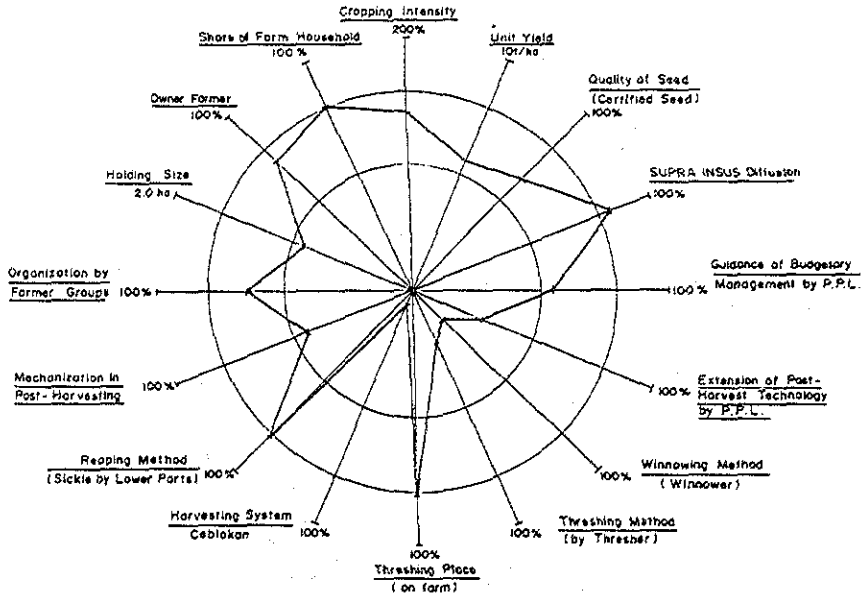
TELAGASARI (WEST JAWA)



BAGOR (EAST JAWA)



MATTIRO BULU (SOUTH SULAWESI)



TRIMURJO (LAMPUNG)

Fig. V 1 - 2 CHARACTERISTICS OF PILOT AREAS

QUESTIONNAIRE TO EXTENSION WORKERS

Area : _____
Classification : _____
Sample No. : _____
Date : _____
Enumerator : _____

Q-1 GENERAL

1.1 Name : _____
1.2 Age : _____
1.2 Grade : a. P.P.S, b. P.P.M, c. P.P.L, d. P.P.K
1.3 Position : _____
1.4 Service period :
1.5 Education carrier
a. High School b. BSC c. MS d. PhD.
1.6 Wage and allowance per month : _____ Pps.

Q-2 WORKING RECORD

2.1 Number of farmer you visited during latest one week
a. 0
b. 1
c. 2 Mon._____ Tue._____ Wed._____ Thu._____ Weekly Total _____
d. 3
e. 4

2.2 Kind and the number of farmer you visited during latest one week
a. key farmer No._____ d. SUPRA INSUS farmer No._____
b. ordinary farmer No._____
c. tenant farmer No._____

2.2 Theme of training you received during latest month
a. _____
b. _____
c. _____
d. _____

2.3 Mark the alphabet which you have ever extended to farmers : _____
a. training on farming practice of paddy
b. instruction of pre-harvest machinery
c. instruction of post-harvest machinery
d. extension of suitable application of fertilizer
e. extension of suitable application of agro-chemicals (weedicide)
f. extension of suitable application of agro-chemicals (pesticide)
g. extension of suitable application of agro-chemicals (fungicide)
h. guidance on budgetary management of SUPRA INSUS FARMERS GROUP
i. guidance on budgetary management of FARMERS GROUP
j. guidance on budgetary management of individual farm house hold
k. guidance on timely harvesting of paddy
l. guidance on market strategy of paddy
m. guidance on saving of the post-harvest losses of rice
n. BIMAS guidance
o. INSUS guidance
p. SUPRA INSUS guidance
q. P3A system guidance

Q-3 Select the alphabet on the importance of selection of high quality paddy seed :_____
a. increse in yield of paddy
b. decrease in damages by insect and pest
c. increase in selling price
d. decrease in harvesting losses
e. decrease in requirement of fertilizer
f. decrease in requirement of agro-chemicals
g. decrease in labour input
h. timely harvest activity
i. even paddy maturing
j. improvement of the quality of paddy
k. decrease in milling loss
l. decrease in storage loss

Q-4 Selection the alphabet on the importance of timely fertilizer application : _____

a. increase in yield of paddy
b. increase in quality of paddy
c. decrease in damages by insect and pest
d. decrease in milling losses
e. decrease in storage losses
f. timely harvest activity
g. decrease in fertilizer requirement
h. decrease in labour input
i. increase in selling price
j. even paddy maturing

Q-5 Select the alphabet on the importance of timely paddy harvest : _____

a. increase in productic b. decrease in harvest l c. improvement of production quality
d. increase in market pre. increase in seed prod f. improvement of seed quality
g. decrease in rats dama h. decrease in birds dam i. decrease in insect and pest damage

Q-6 Select the alphabet on the proper time of paddy harvest: _____

a. fixed data after transportation
b. when all paddy stems and leaves turn yellowish
c. when 50 % of the upper portions of panicles become yellowish
d. when 70 % of the upper portions of panicles become yellowish
e. when 80 % of the upper portions of panicles become yellowish
f. when 90 % of the upper portions of panicles become yellowish

Q-7 Select the alphabet on the important objectives of the drying paddy : _____

a. decrease the paddy weight for carring
b. decrease losses during milling
c. decrease pest and insect damage after milling
d. preservation of nutrient value, texture and appearance
e. increase in selling price
f. decrease in storage losses of paddy
g. decrease in storage losses of rice

Q-8 Select the alphabet on the importance of multipass whitening : _____

a. increase in grain weight
b. increase in grain value
c. decrease in broken rice
d. decrease in friction and heating to grains
e. shining of grain
f. control of grain moisture
g. decrease in storage losses

Q-9 Select the alphabet on the reasons of milling losses : _____

a. improper milling method
b. paddy damaged by insect and others
c. high moisture contents of paddy
d. contents of different variety of paddy
e. contents of several sizes of paddy grains
f. contents of small size of paddy grains
g. contents of big size of paddy grains
h. low moisture contents of paddy
i. timely milling after harvest
j. big quantity of milling paddy
k. small quantity of milling paddy

Q-10 Do you know the method of determination of paddy grain moisture?

yes/no

How to : a._____

b._____

c._____

d._____

ANNEX VI

PRESENT CONDITIONS OF STUDY AREA

STUDY ON
IMPROVEMENT OF RICE POST HARVEST
AND MARKETING IN FARMER GROUPS

ANNEX-VI PRESENT CONDITIONS OF STUDY AREA

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1. GENERAL CONDITION

1.1 Administration and Population

The four survey areas are administratively located in the following Kecamatans and covers the whole area of the Kecamatans respectively:

Kecamatan (Survey Area)/ Province	Area (km^2)
1. Telagasari/West Java	50
2. Bagor/East Java	51
3. Mattiro Bulu/South Sulawesi	161
4. Trimurjo/Lampung	58

Their locations in related Kabupatens are shown on Figs. VI 1-1 to 1-4 respectively, and the socio-economic conditions are briefly discussed in Annex IV. Physiographic conditions of these areas are generally flat in comparison with surrounding Kecamatans and they have characteristics as representative rice producing areas in whole of the related Kabupatens.

Demographic conditions in the survey areas are as summarized below (details are shown in Table VI 1-1 and Annex IV).

(1988)

Survey Area	Population (10^3)	No. of Households (10^3)	Farm Household	
			No. (10^3)	Share to TOTAL (%)
1. Telagasari	49.6	12.9	10.2	79
2. Bagor	50.6	11.9	10.9	92
3. Mattiro Bulu	23.2	4.8	4.1	87
4. Trimurjo	42.7	8.2	6.7	81

The share of farm household ranges from 79 to 92%, and that shows the survey areas are typical rural regions. Agriculture is the dominant sector in these areas. Number of labor force is estimated as follows:

Survey Area	Total Labor Force (10^3)	Agricultural Labor Force No. (10^3)	Agricultural Labor Force Share to (1) (%)
	(1)		
1. Telagasari	32	25	79
2. Bagor	32	30	92
3. Mattiro Bulu	11	10	87
4. Trimurjo	24	20	81

1.2 Agricultural Land Use

The present land use in the survey areas are shown in Table VI 1-1 and summarized as follows:

Survey Area	Irrigated Paddy Land Area (ha)	Irrigated Paddy Land Share to (1) (%)	Total Farmland Area (ha)	Total Farmland Share to (1) (%)	Total Area Area (ha)	Total Area Share (%)
					(1)	
1. Telagasari	3,960	79	3,980	80	5,000	100
2. Bagor	1,940	38	2,260	44	5,120	100
3. Mattiro Bulu	3,950	25	15,940	99	16,100	100
4. Trimurjo	3,900	67	4,500	78	5,800	100

Source : WKBPP, 1989

In Telagasari, 80% of total area are used as farm land, of which 99% is under irrigated condition. The land use condition in Trimurjo is similar to that of Telagasari, and 86% of agricultural land is under irrigated paddy field. In Bagor, 44% of total area is used as agricultural land and the rest area is not used because topographic condition is hilly and not suitable to agricultural land use. In Mattiro Bulu, 99% of total area is used as agricultural land, and irrigated paddy field occupies 25% of total area. The remaining agricultural land are used for crop cultivation.

Irrigated paddy fields in each survey area are under technical irrigation schemes where the irrigation water is supplied throughout the year in general. The most of the irrigated paddy land is covered by SUPRA INSUS program

1.3 Land Tenure System and Holding size

The compositions of farm household in each survey area are shown below:

Survey Area	Farm Households							
	Owner Farmer		Tenant Farmer		Agricultural Laborer		Total	
	(10^3)	(%)	(10^3)	(%)	(10^3)	(%)	(10^3)	(%)
1. Telagasari	3.9	38	2.1	27	4.2	35	10.2	100
2. Bagor	2.5	23	5.7	52	2.7	25	10.9	100
3. Mattiro Bulu	2.3	56	1.8	44	-	-	4.1	100
4. Trimurjo	5.0	74	1.1	17	0.6	9	6.7	100

Source: WKBPP, Camat Office

Percentages of agricultural laborer's households in Telagasari and Bagor are 35% and 25% respectively and higher than out of Java areas of Mattiro Bulu and Trimurjo. On the other hand, owner farmer households in Mattiro Bulu and Trimurjo are predominant farmers sharing 56% and 74% of total households.

Average holding size of irrigated paddy field by owner farmers and/or tenant farmers are as follows:

(Unit: ha/household)

Survey area	Average Land Holding Size (Owner)	Average Farming Size (Owner/Tenant)
1. Telagasari (West Java)	1.0	0.7
2. Bagor (East Java)	0.8	0.2
3. Mattiro Bulu (South Sulawesi)	1.7	1.0
4. Trimurjo (Lampung)	0.8	0.6

Average land holding size in Mattiro Bulu is exceptionally larger than those in other survey areas. The average farming size in Bagor is extremely small operating 0.2 ha by owner and tenant farm households.

Average farming size by agricultural laborers in each survey area is estimated as follows:

(Unit: ha)

Survey Area		Average Farming Size per Agricultural Laborer
1. Telagasari	(West Java)	0.4
2. Bagor	(East Java)	0.3
3. Mattiro Bulu	(South Sulawesi)	-
4. Trimurjo	(Lampung)	2.2

Average farming sizes cultivated by agricultural laborers in two survey areas of Java Island are less than 0.5 ha, and that in Trimurjo is 2.2 ha. Agricultural laborers in Telagasari and Bagor are supposed to contribute to actual farming practices greatly in comparison with areas out of Java.

1.4 Infrastructure

The locations of social and agricultural infrastructure such as, roads (paved and non-paved), canals, etc. are illustrated in Figs. VI 1-5 to VI 1-8. Main roads crossing the survey areas to center towns in related Kabupatens are fully paved in every survey area. Maintenance of paved roads are not fully conducted in Mattiro Bulu and the road condition is becoming worse. The connecting roads from village to main roads are unpaved but well maintained even in rainy season in all the areas except Telagasari. In Telagasari, connecting roads are partly paved and some unpaved parts of roads become muddy especially in wet season, hence vehicles' passage is difficult.

The farm road with a width of about 2 m in paddy field is well networked in Bagor, and a part of Trimurjo. Hand tractors and carts with capacity of 500 kg are easily passable within these survey areas. In Telagasari and Mattiro Bulu, no farm roads are constructed and only simple ridges crossing paddy fields exist. Transportation of farm inputs and outputs is hard and time consuming work in these two areas.

The paddy fields in the survey areas are under the following irrigation systems which are classified as technical irrigation schemes (existing irrigation system map are shown on Figs. VI 1-9 to VI 1-12):

Survey Area	Irrigation System	Water Source	Location of Survey Area
1. Telagasari	Jatiluhur	Jatiluhur Dam	lower
2. Bagor	Brantas	Widas Dam	middle
3. Mattiro Bulu	Sadan	Sadan Reservoir	lower
4. Trimurjo	Way Sekampung	Sekampung River	upper

Main, secondary and tertiary irrigation canals are well maintained by Ministry of Public Works. Tertiary and quarterly canals are managed by farmer/farmer groups, and quarterly canals are partly constructed by farmers themselves. Drainage conditions are not satisfactory in all in the areas except Bagor. In Bagor, drainage canals are partly constructed by farmers themselves, and the drainage water is well controlled.

Modes of communication in the survey areas are radio and postal services, and about 10% of farm households own television sets in each survey area. Telephone facilities are not facilitated in all of the survey areas, and most of households receive electric supply services.

The present conditions of infrastructure in the survey areas are summarized in Table VI 1-2.

2. FARMING ACTIVITIES

2.1 Cropping Patterns

In Telagasari, double cropping of paddy is practiced under irrigated conditions. Wet season paddy is seeded at the beginning of the rainy season, i.e. October and November and harvested from February to April. Dry season paddy is seeded from March to April and harvested from July to August. Recommended paddy varieties are Cisadane for wet season and IR64 for dry season, while IR64 for wet season cropping was planted in 10% of the area. Farmers prefer IR64 because of its higher productivity and

shorter growing period. Cropping schedule is prolonged, because it actually takes 45 days to transplant and harvest respectively, while each work is scheduled within 30 days. Major reasons for the prolonged cropping are difficulties of timely irrigation water supply to the entire area due to insufficient construction of quarterly canals, as well as labor shortage due to serious overlapping of harvesting and transplanting works. The cropping pattern of paddy is predetermined by the irrigation committee according to the irrigation water distribution plan in the Jatiluhur irrigation system. The cropping patterns planned by committee and actually operated and the average rainfall pattern are illustrated in Fig. VI 2-1 and summarized in Table VI 2-1.

In Bagor, rotational sugar cane planting in 10% of the whole paddy field is the obligation stipulated by law. The remaining 90% paddy field is cropped with paddy fully in wet season. Planting share of paddy and palawija for the dry season cropping is 80% and 10% respectively. Palawija is also cropped in between the dry and wet season cropping in about 60% of the paddy field. The annual cropping intensity is estimated at 260%. Wet season paddy is seeded from November to December and harvested from March to April. The dry season paddy is seeded in April and harvested from July to August. IR36 is recommended and planted in both crop seasons. Cropping schedule generally tends to be prolonged mainly due to shortage of manpowers to implement the tight cropping schedule (See Table VI 2-1 and Fig. VI 2-2).

In Mattiro Bulu, the cropping intensity of wet season paddy, dry season paddy and palawija is 100%, 80% and 50% respectively. The annual cropping intensity is estimated at 230%. The wet season paddy is seeded from October to November and harvested from February to March. The dry season paddy is cultivated during the period from April to September. Cropping schedule is prolonged due to difficulties of timely irrigation supply due to insufficient construction of quarterly canals and shortage of laborers. Recommended varieties of paddy are IR42 and IR36 for wet season and IR64 for dry season. Predominant variety for wet season is IR36 covering 80% of the area. IR64 for dry season is extended (See Table VI 2-1 and Fig. VI 2-3).

In Trimurjo, double cropping of paddy is prevalent in the irrigated paddy field. Cultivation of upland crops are limited to only 2% of the area. Cropping of the dry season paddy is restricted to 50% of the total paddy field once in 3 years due to shortage of irrigation water. The wet season paddy is seeded from November to December and harvested from March to April. The dry season paddy is cultivated during the period of April to September. The scheduled periods for transplanting or harvesting is within one month respectively, while actual periods are prolonged to around 45 days each. Major reasons are the difficulties of timely water supply due to insufficient construction of quarterly canals, delayed land preparation and labor shortage for harvesting works. Recommended paddy variety is Cisadane for wet season and IR64 for dry season. IR64 and IR42 for the wet season covers 80% of the area instead of recommended variety of Cisadane due to the reasons same as the case in Telagasari (See Table VI 2-1 and Fig. VI 2-4).

2.2 Pre Harvest Activities

There are much differences in pre harvest activities among the four survey areas. In Telagasari and Bagor, the land preparation such as plowing, harrowing and puddling has been mechanized in significant extent, while in Trimurjo, use of animal power for the said practices is dominant. In Mattiro Bulu, mechanization and use of animal power co-exist equally. As for transplanting, the contract based work by agricultural laborers is prevalent in Telagasari and Bagor. In other areas, transplanting is performed mainly by own family labors farmers partly supplemented by exchanged family labors under Gotongroyong system.

Regular transplanting is extended in general, while random transplantation is predominant in Mattiro Bulu. Planting density at 200,000 - 250,000 hills/ha has been standardized in all the survey areas, under SUPRA INSUS program.

Herbicides are commonly used in Mattiro Bulu and Trimurjo. The utilization of hericides is prohibited by regulation in other areas located in Java Island. Insecticides are used only for emergency means. Fungicides are not normally applied. The actual average dosage of fertilizers is as shown in the following table:

(Unit : kg/ha)

	Telagasari	Bagor	Mattiro Bulu	Trimurjo
N	92	125	69	90
K_2O	60	45	36	69
P_2O_5	46	46	46	60

Source : BPPs

2.3 Post Harvest Activities

(1) Reaping/threshing

Harvesting consisting of reaping and threshing is done mainly by agricultural laborers in Telagasari and Bagor. On the other hand, it is done by family members of the farmers with the assistance of members of other families in the same community in Mattiro Bulu and Trimurjo. There are basically two labor employment systems in the survey areas. They are Gropyokan and Ceblokan. The Gropyokan predominates in Bagor, Mattiro Bulu and Trimurjo and the Ceblokan in Telagasari. In any cases the remuneration of harvesting is usually paid in kind. Payment in cash is increasing in Bagor and Mattiro Bulu. About 20 Rp/kg of paddy and 15 Rp/kg are the unit wages currently paid to the harvesters in Bagor and Mattiro Bulu, respectively.

Paddy is reaped by common sickles in most cases. Serrated sickles are so far not popular in all the areas. Rice plants are cut at the lower parts of the plants in Bagor. Paddy fields in Telagasari and Trimurjo and topographically lower part of paddy fields in Mattiro Bulu have standing water even after maturing of wet season paddy, hence the plants are obliged to cut at the middle parts of the plants between 20-30 cm above the fields. The plants after reaping are put on the stubbles by 2-3 hills in order to protect the panicles from standing water and mud. Work efficiency for reaping of wet season paddy in the above three areas is lower and paddy qualities tend to deteriorate. The stubbles remained at fields disturb the land preparation for next cropping. In fact, the clearance of those remaining stalks induce additional cost of about Rp 10,000/ha for long stalks and also bring about labor shortage.

The reaped paddy plants are gathered in the several places in the paddy field for threshing. Paddy is threshed within 24 hours after reaping in general. The gathered paddy sometimes deteriorates by heat or germinates, when threshing delays.

Manual threshing by beating is predominant in Telagasari and Mattiro Bulu. Pedal threshers have been introduced in Bagor and Trimurjo and about 80% and 10% of paddy is threshed by pedal threshers respectively in the said areas. The remaining paddy is still threshed manually. Pedal threshers are prepared by farmers themselves using parts of bicycles and local materials such as bamboo, wooden plate. It costs about Rp 15,000 to 30,000. Retailing price of manufacturing pedal thresher is around Rp 50,000 in the local shops. An efficiency of the package work of reaping, threshing by pedal thresher and sacking of threshed grain is estimated to be 1.0 to 1.5 t/day when 5 laborers work for 10 hours a day.

The vinyl sheet is widely used for paddy threshing. The different size of sheet is prevailing in each area, namely 5 m x 5 m in Bagor and Trimurjo, while around 2.5 m x 3.6 m in Telagasari and about 2.8 m x 2.1 m in Mattiro Bulu. It is generally recognized that the small sheet causes much scattering loss of paddy grains.

(2) Transportation

The threshed paddy is packed in vinyl bags and transported to farmers' houses by agricultural laborers in most cases in Telagasari, Bagor and Trimurjo. A part of the packed paddy is directly, sold to rice broker on field. In Mattiro Bulu packed paddy is transported on the backs of horses to selling depot which has been established along the main road by the farmers group. Transportation cost by horse is 1.3 - 2.5 Rp/kg/km.

(3) Cleaning and drying

Cleaning and drying of paddy are not commonly practiced by farmers except for the home-consumption paddy. For the paddy to be sold only large impurities are only removed before sacking. It is reported by

Ministry of Agriculture, 1988, that the quality improvement of paddy by the practices such as sun-drying, wind-cleaning, mechanical drying is not economical under the prevailing price of paddy. In fact, the benefit brought by the quality improvement of paddy does not compensate enough the cost required for cleaning/drying under the present marketing prices of paddy as summarized below:

(Unit: Rp/kg)

Cleaning/Drying	Cost	Benefit*		Net Return	
	Java	West Java	East Java	West Java	East Java
Sun-Drying and Wind-cleaning	2.4	3.3	1.0	0.9	-1.4
Traditional Cleaning ("Tampi")	2.0	0.2	0.1	-1.8	-1.9
Mechanical Drying (Lister-type)	7.5	4.8	-0.7	-2.7	-8.2

* : Benefit by rise of price due to paddy quality improvement after taking account of weight loss

Source : Price and Quality of Foodcrops Agriculture in Indonesia, Ministry of Agriculture, 1988.

2.4 Paddy Yield

The unit yield is 6 to 7 t/ha in Telagasari and Bagor of Java, and 5 to 6 t/ha in Mattiro Bulu and Trimurjo. Yield of wet season paddy is relatively higher than that of dry season paddy in each area. The unit yield is tabulated below:

Survey Area	Yield (t/ha)	
	Wet Season	Dry Season
Telagasari	6.8	6.5
Bagor	6.5	6.3
Mattiro Bulu	5.8	5.8
Trimurjo	5.7	5.2

Source: District Agricultural Office
Central Bureau of Statistics

3. FARM ECONOMY AND LABOR BALANCE

3.1 Crop Budget

The requirement of labor force for paddy cultivation is as summarized below:

(Unit: man-day)

	Telagasari			Bagor			Mattiro Bulu			Trimurjo		
	F	H	T	F	H	T	F	H	T	F	H	T
Wet Season paddy	6	99	105	15	91	106	78	22	100	81	19	100
Dry Season paddy	6	93	99	15	86	101	73	22	95	76	19	95

F: Family Labor H: Hired Labor T: Total

Under the present socio-economic situation of the survey areas, the hired labors occupy a large share of the total requirement of labor force in Telagasari and Bagor, and in contrast, the family labors are predominant in Mattiro Bulu and Trimurjo.

The crop budget on paddy cultivation is analysed based on the price/cost in 1988 as summarized below:

(Unit: '000 Rp/ha)

	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.
A. Gross income	1,360	1,632	1,216	1,455	1,009	1,125	1,003	1,269
B. Production cost								
1) Farm inputs	120	120	148	148	109	109	125	125
2) Hired labor	389	377	304	336	45	50	65	82
3) Animal and machinery	55	55	50	50	70	70	24	24
4) Total	564	552	502	534	224	229	214	231
C. Net return	796	1,080	714	921	785	896	789	1,038
	(68%)	(66%)	(58%)	(63%)	78%)	(80%)	(79%)	(82%)

Although the value of gross income varies from Rp 1.3 million/ha to Rp 1.6 million/ha among 4 survey areas, the dry season paddy is always higher than that of the rainy season paddy in every areas. This is mainly due to the fact that the price of dry season paddy lies at higher position in the seasonal fluctuation. Rather big difference of income level between Java island and outer islands is also directly attributed to the price gap appeared in the local rice market, region by region.

As for the net return, no significant difference is observed among 4 survey area, as far as the comparison is made among the amount of net return in each area namely Rp 714,000 to Rp 796,000/ha in rainy season paddy and Rp 896,000 to Rp 1,080,000/ha in dry season paddy, respectively. In reality, however, the sharing of net return to gross income varies widely from 58% to 81%. Low sharing of net return as seen in Telagasari and Bagor is mainly due to high production cost because of large labor cost for hired worker.

As much as 7 to 8% of the paddy production is lost at field during the harvesting. The next table shows the amount lost in the field as harvesting loss.

(Unit: Rp '000/ha/year)

	Telagasari	Bagor	Mattiro Bulu	Trimurjo
Wet season	126	85	92	92
Dry season	152	101	103	116

These harvesting losses are corresponding to about 10 to 15% of the annual net return.

3.2 Farm Economy

The farm economy in the respective survey areas is assessed according to the tenurial status of owner farmer and tenant farmer. The farm budget for owner and tenant farmers is prepared by average farming size in each survey area as below:

(Unit: '000 Rp)

	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant
Farm size (ha)	1.04	0.67	0.78	0.24	1.72	0.95	0.79	0.65
1. Farm income	1,766 (81%)	366 (47%)	1,137 (72%)	221 (31%)	2,466 (99%)	940 (97%)	1,307 (98%)	528 (79%)
2. Non-farm income	419 (19%)	412 (53%)	451 (28%)	489 (69%)	18 (1%)	30 (3%)	24 (2%)	162 (21%)
3. Total income (1+2)	2,185 (100%)	778 (100%)	1,588 (100%)	710 (100%)	2,484 (100%)	970 (100%)	1,331 (100%)	670 (100%)
4. Living expense	2,065	749	1,480	667	2,145	925	1,184	662
5. Net reserve (3-4)	120	29	108	43	339	45	147	28

3.3 Labor Balance

Labor shortage is one of the reasons for the prolonged cropping schedule. The labor balance study was made in order to assess the demand and supply of labor force on present and planned cropping patterns in each survey area.

The present and planned seasonal labor requirement per ha for every 10 days was calculated based on the present unit labor requirement for paddy production and present and planned cropping patterns. The annual workable days are estimated to be 292 days (365 days x 80%), and it is taken into account. The peak labor requirement appears at the time for harvest of wet season paddy and land preparation of dry season paddy in Telagasari, Bagor and Trimurjo. In Mattiro Bulu, the peak is in the transplanting time of wet season paddy. The peak labor requirement and peak season are summarized below. The details based on present cropping pattern is shown in Table VI 3-5.

	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. On Present Cropping Pattern				
- Peak labor requirement (man/day/ha)	1.70	1.60	1.05	1.28
- Peak season	Apr.11-20	Apr.11-20	Nov.21-Dec.10	Apr.11-May 10
2. On Planned Cropping Pattern				
- Peak labor requirement (man/day/ha)	2.15	2.24	1.46	2.19
- peak season	Mar.1-20	Mar.20-31	Feb.11-Mar.10	Apr.21-30

The peak labor requirement on planned cropping pattern is more than that on present one. The peak labor requirement at the present cropping schedule is considered to be the available labor force which could be supplied from in and around the survey areas. The required labor force during the peak seasons, especially for harvesting, are procured from outsides of the related Kecamatans at present. It is reported that harvesting laborers for wet season paddy in Telagasari and Bagor sometimes come from other Kabupatens or Province (Central Java). For the realization of planned cropping schedule, additional procurement of labor forces or utilization of labor saving machines will be required.

4. MARKETING OF PADDY AND RICE

4.1 Marketing of Paddy and Rice

Most of the farmers sell the paddy in the form of the fresh paddy without drying and cleaning to middlemen immediately after harvesting. As for the dry season paddy, some medium and large scale farmers whose farming have been capitalized in certain extent sell paddy after drying and/or milling. Small scale or tenant farmers sell wet paddy immediately in most cases so as to get cash income early. The marketing activities are summarized in Table VI 4-1.

The joint selling of paddy or rice by farmers' groups is not common in the survey areas. While joint utilization of warehouses is realized by some farmer groups in case of Bagor and Trimurjo. These common warehouses are sometimes lended to other farmers. Some farmer groups in Mattiro Bulu constructed conventional selling depots along the main road for paddy selling. Marketing of milled rice by farmers is sometimes observed in the areas where the custom mill of rice is served by the private rice mills in the villages.

The marketable surplus of paddy and rice is presumably estimated on the basis of production, food consumption and capacity of rice mills in the survey areas as shown in Table VI 4-2 and Table VI 4-3.

(10^3 ton of rice)

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo/2
Production/1	29 (100%)	13 (100%)	22 (100%)	24 (100%)
Food Consumption in the area	7 (24%)	5 (38%)	3 (14%)	5 (21%)
Marketable Surplus				
By Paddy	18 (62%)	3 (23%)	8 (36%)	13 (54%)
By Rice	4 (14%)	5 (39%)	11 (50%)	6 (25%)

/1 : Excluding feed, seed and waste of paddy.
/2 : Excluding capacity of 2 private rice mills.

The total capacity of rice mills in the respective survey area is always short to process the total paddy product, hence some 23% to 62% of paddy is sold outside of the areas. The outlines of milling facilities in the survey areas are summarized in Table VI 4-4.

4.2 Drying, Milling and Storage Facilities

4.2.1 Drying facilities

As stated in the preceding section 4.1, drying of paddy product is practised to limited extent at on-farm level. About 10% of farmers have concrete floors in the home yard in Bagor, and a half of farmers in Trimurjo, while very limited concrete floors in Telagasari and Mattiro Bulu. Most farmers mainly use the local sheets and/or plastic sheets for drying. The size of concrete floor prepared by farmers is in most cases around 5 m x 5 m (25 m^2).

Paddy is dried at rice mill as one of the practices of rice milling process in general. Large scale concrete floors and dryers are used for the said practice. These drying floors are around 500 m^2 to 2,000 m^2, and each size corresponds to the milling capacity. Prevailing batch-in-bin dryers operate for 1 - 2 months a year mainly for the wet season paddy. The capacities of drying facilities are estimated in the following table and detailed in Table VI 4-5:

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Drying Floor				
- Total area (10^3 m^2)	37.6	0.6	28.6	117.6
- Area per ha of paddy field (m^2/ha)	9.5	0.5	5.4	28.6
2. Dryer				
- Number (No.)	3	1	1	3
- Holding Capacity (ton)	15	7	8	9

4.2.2 Rice Mill

The rice mills are grouped into three, i.e. large scale mill with a capacity of more than 0.7 t/hr, small rice mill with 0.3 - 0.7 t/hr capacity and Engelberg huller with a capacity of less than 0.3 t/hr. Large rice mills are owned by KUDs or rice wholesalers in general. Numbers of large rice mills and those milling capacities in the survey areas are as summarized below and those locations are shown in the general maps of survey areas.

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Number of Mill				
- KUD owned	0	(1)/1	0	4
- Private miller owned	2	1	2	3
2. Capacity of Mill (t/hr)/2				
- KUD owned	-	-	-	0.8 (3) 1.0 (1)
- Private miller owned	0.7 (2)	2.0 (1)	2.2 (2)	2.0 (2) 1.7 (1)

/1; Rice mill is under replacement/installation at present.
/2; Figures in parentheses show the number of mills.

New rice mills have been recently introduced in KUD. These rice mills and large rice mills consist of the complete set of machinery and equipment such as paddy cleaner, husker, paddy separator, rice whitener and rotary-shifter. However, the rice milling performance of these rice mills is still low because of shortage of operation fund, spare parts, man-power, etc.

A large rice mill owned by rice wholesalers is equipped with a paddy cleaner, husker, paddy separator, two or three sets of whiteners and thickness grader. Most of these rice mills are however superannuated and efficiency in operation is low though these machinery units are well maintained.

Small rice mills having 0.3 - 0.7 t/hr capacity are located in the village yard in each survey area. Most of these mills are owned by rich farmers. Some of rice mills are established and managed under joint

ownership of farmers. The custom milling is the main service of these mills. These have functions of husking and whitening of rice. Most of these mills are not well maintained, and the operation efficiency is always low with significant contents of broken rice. These small mills are usually operated for 4 - 5 hours a day during the harvesting season and/or about for 400 - 500 hours a year. Custom milling is charged at about Rp 20/kg of rice. Numbers of rice mills in the survey areas and those capacities are summarized in the following table and detailed in Table VI 4-6:

Item		Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Number of Unit by scale					
- Large scale	(> 0.7 t/hr)	2	1	2	7
- Small scale	(0.3-0.7 t/hr)	50	15	-	66
- Engelberg huller	(<0.3 t/hr)	-	-	79	-
2. Total Capacity (10^3 t)		11.0	9.5	13.9	25.8 (11.0) *

*: Excluding large scale rice millers collecting paddy from the other Kecamatans.

4.2.3 Storage Facilities

Paddy for home consumption and stocks is dried and cleaned in the home yards. Bagged paddy is usually stored in sheds or conventional warehouses (Lumbung) made of local wooden materials. In these facilities, paddy is susceptible to damage by rats, insects and high humidity in general. The period of storage is less than 5 months.

Large and consolidated warehouses are attached to rice mills owned by KUDs and rice wholesalers. Some of warehouses have simple wooden structures with slated roofs. Modern warehouses built with prefabricated steel structures and concrete floors have also been established recently under KUD. The unit capacity of these warehouses is 300 - 1,000 t. KUD's warehouses are used not only for paddy and rice but also for farm inputs such as fertilizers and agro-chemicals.

Numbers of warehouses in the survey areas and those capacities are summarized in the following table and detailed in Table VI 4-5.

Item		Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Capacity					
- Total Capacity	(t)	5,600	13,500	13,000	19,700
- Total Capacity to total paddy production	(%)	11	56	33	46
2. Distribution Share	(%)				
- KUD		6	2	39	7
- Sub-DOLOG		-	34	5	-
- Private Miller		6	56	53	51
- Farmer/Village		88	8	3	42
3. Capacity per Farmer /1	(t)	0.5	0.1	0.1	1.2

/1: Warehouse capacity of farmers and villages divided by the number of farm household.

4.3 Price and Quality

4.3.1 Price

The farm gate price of paddy is fluctuated seasonally, i.e. price is the lowest in April to May, when the wet season paddy is harvested and most of them is sold, and the highest in December or January. Monthly fluctuation of current farm gate price of paddy in the related kabupatens is shown in Figs. VI 4-1, 4-3, 4-5 and 4-7. Farm gate prices of paddy by season in 1988 are summarized as follows:

(Unit: Rp/kg)

Season	Karawang (Telagasari)	Nganjuk (Bagor)	Pinrang (Mattiro Bulu)	C. Lampung (Trimurjo)
Wet Season Harvesting	200 (Mar-Apr)	187 (Mar-Apr)	174 (Mar-Apr)	176 (Apr-May)
Dry Season Harvesting	251 (Jul-Aug)	231 (Jul-Aug)	194 (Aug-Sep)	244 (Aug-Sep)
Off Season	282	282	206	279

The wholesale prices of rice are also fluctuating seasonally showing the same trend as farm gate price of paddy. The current wholesale price is shown in Figs. VI 4-2, 4-4, 4-6 and 4-8. The lowest and highest wholesale prices of rice in 1988 are as follows:

(Unit: Rp/kg)

Item	Karawang (Telagasari)	Nganjuk (Bagor)	Pinrang (Mattiro Bulu)	C. Lampung (Trimurjo)
Lowest Price	358	357	328	373
Highest Price	520 (Dec)	460 (Nov)	404 (Jan)	560 (Dec)

Source: Kabupaten Agricultural Office and CBS

Table VI 4-7 and Figs. VI 4-9 and 4-10 show the price indexes of paddy and rice which have been estimated based on the monthly average farm gate and wholesale prices during the years from 1983 at 1988 and 1988 constant price.

4.3.2 Quality

The paddy quality observed monthly in 1988 is shown in Table VI 4-8 and as summarized below:

Item	Karawang (Telagasari)	Nganjuk (Bagor)	Pinrang (Mattiro Bulu)	C. Lampung (Trimurjo)
1. Moisture Contents (%)				
- Wet Harvesting	22-24	21-25	22-23	18-22
- Dry Harvesting	21-25	21-25	20-21	16-21
- Off Season	16-18	15-18	16-17	15-16
2. Impurities (%)/1				
- Wet Harvesting	15-16	20-23	20-22	16-18
- Dry Harvesting	16-18	18-19	15-16	16-17
3. Paddy Quality Grade				
- Wet Harvesting	GKP	GKP	GKP	GKP (Major) GKS (Few)
- Dry Harvesting	GKP	GKP	GKP	GKP/GKS
- Off Season	GKS	GKS	GKS	GKS

Note : /1: Empty grains, immature grains, blue grains, yellow grains, damaged grains and foreign materials.
Source : CBS, Jakarta

Most of farmers sell surplus paddy product immediately after harvest with moisture content of more than 20% which is graded as "wet paddy at field (GKP)". Paddy sold in the off season is dried up to the moisture content of 15-18% which is graded as "dry paddy for storage (GKS)". The dried paddy which has been prepared as "dry paddy for milling (GKG)" with less than 14% of moisture content is very rare in farmers' level. The content of impurities such as 1) empty grain and foreign materials, 2) green/chalky grains and 3) yellow damaged grain, and 4) red grain ranges around 16-23% in total in all survey areas. The quantities of these impurities are still within the permissible limit of GKG according to the quality standard decided by the government.

Degrees of paddy moisture contents are not sufficiently reflected in farm gate prices as shown in Figs. VI 4-11 to VI 4-13. Moisture testers are seldom used by middlemen or private rice millers for checking the paddy quality in the fields or farm gates. Paddy quality is inspected ocularly or by hand by middlemen or private rice millers. Most

of paddy sold by farmers is not dried up and sufficiently cleaned, hence paddy quality is simply inspected ocularly or by hand. Paddy prices are decided on the basis of the quantities sold by farmers and the prevailing marketing prices in the areas. Large quantities of paddy are sold at more profitable price than small quantities in general.

Present conditions of quality and price for paddy and rice in the survey areas are summarized in Table VI 4-9.

Private large mills can produce rice that meets quality standard of B class for DOLOG procurement in most cases. Small mills produce DOLOG B class rice passing rice two times through whiteners to reduce broken rice. As the product sometimes has much small broken rice, a cleaner is used to separate broken rice. Milling recovery rates in the survey areas are estimated at about 65% for open markets and about 58% for DOLOG.

5. FARMERS' ORGANIZATION

5.1 General

There are three kinds of farmer organizations in the survey areas, i.e. KUD (Unit Villages Co-operative), P3A (Water Users Association) and KT (Farmer Group).

KUD provides farm business service such as farm input supply, marketing service and credit service. P3A provides irrigation water and maintain irrigation facilities, and KT is operating group activities on farm production, processing and marketing by themselves.

Limitation to setting the membership of these organizations is different in each organization. In case of P3A, all the farmers operating rice cultivation in an irrigation block should be the member of P3A without exception. P3A is an organization based on the territorial principle. On the other hand, KUD is organized based on the personal principle, therefore a farmer is enough to be a member of one KUD. Admission and/or secession are decided by only personal intention of individual farmer. KT is organized based on territorial principle but does not force all the farmers operated in the same area to be a member.

KT is rather a cooperate body on farm operation for improving cultivation techniques.

5.2 KUD

Generally one KUD covers 4 to 5 villages and about 500 farm households. However, actual condition of KUD is quite different by each region. In Bagor Kecamatan, there is only one KUD covering 21 villages. On the other hand, in Mattiro Bulu kecamatan, all four villages have KUDs respectively.

Participation rate of farmers to KUD is still less than half of total farm households ranging from 31% to 41%, and farmers' share to whole membership of KUD is about 80% in the survey areas as shown in Table VI 5-1.

Member of KUD should pay the admission fee of Rp 1,000 - 2,500 and monthly membership fee of Rp 100 - 500.

Facilities in each KUD in the survey area are shown in Table VI 5-2. Five KUDs out of ten KUDs have rice mills, while they are operated mainly for custom milling of paddy brought by farmers or middlemen. No paddy procurement by KUDs from farmers is done except one KUD in Bagor as shown in Table VI 5-3. KUDs procure rice from private rice millers and distribute mainly to Sub-DOLOG. The warehouses are mainly used for keeping of farm inputs or machinery garages. Facilities of KUD are not fully utilized up to their holding capacities, at present.

Main activity of KUD is the arrangements of farm inputs under SUPRA INSUS credit scheme (KUT). Most of KUDs have saving accounts collected from members.

5.3 Water User's Association

Water User's Association (P3A) were organized in Telagasari and Mattiro Bulu under the guidance of Rural Extension Center (WKBPP). Traditional irrigation groups headed by irrigation inspector such as Hippa and Ili-ili exist in Bagor and Trimurjo under Kecamatan/Desa administration. These organizations are formulated by tertiary irrigation block under the control of irrigation inspector, and further sub-divided to quarterly block groups covering about 10 ha each as shown in Fig. VI 5-1. All the farmers who have paddy field within the tertiary irrigation block are required to be a member of the Water User's Association. Hence some farmers who own or cultivate the plots in different irrigation blocks are required to be the member of each Water User's Association.

As the irrigation fee, Water User's Association collects paddy of 15 - 20 kg/ha by season from member farmers. These paddy are given to irrigation inspector and laborers as wages or incentives, and used for maintenance of irrigation facilities.

One irrigation inspector and two to three laborers by a Water User's Association are appointed in each tertiary irrigation block in the survey area. Fee collection from members are smoothly done by chief of P3A or irrigation inspector who are managing accounts.

Real activities of each Water User's Association are not the same in the survey areas. Maintenance of irrigation facilities in Telagasari is not sufficient mainly because of weak group activities. In the other three survey areas, irrigation facilities are well maintained by the groups. In Trimurjo, a part of quarterly canals and drainage canals were made by farmer groups themselves.

5.4 Farmer Group Activities

5.4.1 Organization

Farmer groups (Kelompok tani) in the survey areas were organized with farmers participating in SUPRA INSUS Program for promotion of

improved farming technology under the guidance of Rural Extension Center (BPP). A unit of farmer group covers a plot of about 30 - 50 ha in paddy field in survey areas. There are some farmers who belong to two or more different farmer groups similarly as in case of P3A.

Each farmer group consists of one group leader (key farmer), 5 - 10 progressive farmers and 25 - 214 common farmers (followers). The key farmers and progressive farmers are in most cases owner farmers, while tenant farmers occupy around 44% of total progressive farmers in Mattiro Bulu survey area as shown in Table VI 5-4.

Farmer groups have not yet substantially organized tenant farmers into groups in general due to unstable and short term tenant contract. Agricultural laborers are not recognized as members of farmer groups, while they play important roles in Telagasari and Bagor because most of farming activities are operated by these laborers under contracts.

Farmer groups usually consist of several sub-groups, but joint activities and coordination in and between sub-groups are limited to specific works like maintenance of tertiary canals and control of rats.

Generally admission fee and annual membership fee are not collected at present.

5.4.2 Activities

(1) Farming Activities by Group

Land preparation, transplanting and harvesting are labor intensive works for paddy cultivation together with maintenance work of irrigation facilities. These works could not efficiently be completed by one individual farm household. Labor exchanges among farmers (Gotong Royong) have been commonly done in any paddy producing areas. With the progress of monetary economy in subsistence village communities and introduction of labor saving tools and machines, traditional labor exchange system has been changed. Farmer's labor exchanges still remain in the survey areas, while most of hard works become custom works under contracts by cash or in

kind. This tendency is apparent in the regions dense with farm laborer such as West and East Java.

Most of farming activities in Telagasari and Bagor survey areas are carried out by agricultural laborers under the contracts between owner farmers or tenants and laborers or laborer's groups.

Farmer group activities in the survey areas are summarized in Table VI 5-5. In Telagasari survey area, farming practices are usually carried out by individual farm bases and there are little coordination among farmers and farmer groups for joint work on cropping in the same tertiary blocks. Maintenance and repair works of tertiary and/or quarterly canals, related structures and drainage systems are not sufficiently done by farmer groups, hence some of facilities are not well operated or are deteriorated. Land preparation is carried out fully by hand tractor, while there are no joint ownership or utilization by farmer groups. Hand tractors are usually owned by rich farmers and leased to other farmers under contracts. Paddy and rice selling is done by individual farmers. There are no group marketing activities.

In Bagor, farmer groups are organized based on the traditional irrigation association (HIPPA) consisting of one irrigation manager of each farmer group in the village. The irrigation manager and the key farmer of each farmer group are the same person in most cases. Operation and maintenance of irrigation and drainage facilities are commonly done by farmer group members with cooperation of other farmer groups in the village, hence facilities function well. In addition, farm road has been constructed members of farmer groups. Some groups have joint ownership and utilization of hand tractors. There are no group marketing activities.

In Mattiro Bulu and Trimurjo, farming activities are well coordinated. For labor intensive farm activities, labor exchange is carried out among farmers. Manpower from other kecamatans is arranged by farmer groups for harvest in Mattiro Bulu, while transplanting is done by transplanter groups organized in farmer groups in Trimurjo.

There are no cases of group marketing activities, but most of selected farmer groups have interest in joint utilization of facilities for drying, milling and transportation.

(2) Meeting

There are two kinds of meeting for farmer groups. One is the extension meeting for transferring of SUPRA INSUS technologies conducted by extension workers (PPL). The other is the meeting of SUPRA INSUS Coordination Committee (POSKO).

Extension meeting is usually held at field in the daytime except in Telagasari where meeting is usually held in the evening because most of group members have other jobs during daytime. Attendance of extension meeting is usually limited to key farmer and progressive farmers. Progressive farmers, after meeting, instruct new knowledge acquired at the meeting to common farmers. Information flow is usually one side from up to down. Farmer's interests in farm technology mostly depends on their working status. Farm manager or supervisor who occupy major part of farmer group members in Telagasari and Bagor are interested in the information concerned rather production cost, laborers condition and prices of farm inputs and products, than production technology. On the other hand, cultivator farmers who are majority of farmer group members in Mattiro Bulu and Trimurjo, have much interest on production technology especially high labor efficiency technology.

POSKO meetings are scheduled to be held once in two weeks but actually held once a month. As mentioned in Table VI 5-2, meetings are limited to the place for information exchange generally . There are no decisions for countermeasures to solve constraints by farmer group's activities.

5.4.3 Evaluation

In order to identify present conditions of farmer groups on progress stages, farmer group evaluation is conducted every year by each Rural Extension Center based on the criteria and scoring value prepared at Central Office as shown in Table VI 5-6. Then, farmer groups are

classified to four ranks, i.e. I. Beginner Group, II. Advance Group, III. Senior Group and IV. Excellent Group by range of scoring value as shown in Table VI 5-7.

The evaluation results of SUPRA INSUS farmer groups in the survey areas are summarized as follows:

Classification	Telagasari	Bagor	Mattiro Bulu	Trimurjo
Beginner	0	6 (14%)	39 (32%)	0
Advance	55 (54%)	26 (59%)	75 (61%)	4 (8%)
Senior	44 (43%)	11 (25%)	7 (6%)	36 (68%)
Excellent	3 (3%)	1 (2%)	1 (1%)	13 (24%)
Total	102 (100%)	44 (100%)	122 (100%)	53 (100%)

More than 50% of farmer groups in the survey areas are classified to Advance Group which is characterized that:

1) Nucleus members are contacting other members, while activities are limited,
2) Working plan is prepared,
3) Key farmer is active, and
4) Key farmer can manage cooperate activities in the group.

Selected farmer groups in the survey areas are mostly classified into Senior Group or Excellent Group except in Pinrang as follows:

Survey Area/Name of Farmer Group	Scoring Value	Class	Survey Area/Name of Farmer Group	Scoring Value	Class
1. Telagasari			3. Pinrang		
- Karya Tani	671	Senior	- Reso P I	793	Excellent
- Banyu Asih	720	Senior	- Reso P II	353	Advance
- Sri Mulya	584	Senior	- Reso P III	428	Advance
- Marga Mulya	535	Senior			
2. Bagor			4. Trimurjo		
- Boga Sembada	774	Excellent	- Krida K. II	798	Excellent
- Ringin Tunggal	665	Senior	- Parti Bogo	779	Excellent
			- Yoso Makmur	705	Senior

According to the field survey conducted by the study team, there are much room to strengthen farmer group activities especially on post harvest and marketing improvement even in the excellent groups.

5.5 Problems for Development

5.5.1 Structural Problems

Each tertiary irrigation block is equipped with one turn out structure to control irrigation water distribution to the respective tertiary block areas of about 150 ha through quarterly canal system. For smooth operation and maintenance of irrigation facilities, a Water Users Association (P3A) is organized in each tertiary irrigation block and further sub-divided to quarterly block that cover about 10 ha each as a minimum unit of the association.

On the other hand, farmer group is formulated as an operating unit of group activities on SUPRA INSUS Program in the same paddy fields of about 30 - 50 ha. Some of sub-groups are also made by progressive farmers and followers by each farmer group.

Activities of both farmer groups and quarterly block groups for irrigation is required to coincide, while instruction and supervision would be sometimes separately or partially done without coordination of the plans. Farmer's and their group activities are not carried out effectively without integrated and packaged plans or instructions, under one consolidated organization.

5.5.2 Shortage of Internal Communication

Organizational structure of SUPRA INSUS Program is completely formulated from the Central Government down to the village administration. Most of farmer groups in SUPRA INSUS Program are strongly supported by the administrative coordination committees (POSKO) organized in each administrative levels as shown in Fig. VI 3-1. Regular meeting of POSKO is usually held once in two weeks or at least once a month. All the key farmers are attending this meeting as a representative of each farmer group.

In addition, extension meeting is regularly held for each farmer group once every two weeks by extension worker. In this meeting, external communication of farmer group is fairly well operated and has little problems. On the other hand, internal communication in farmer group has much room to be improved.

The extension meeting is a main pipe of communication for farmer groups. However, most of the time is spent for administrative instruction, formulation of list of applicant and input requirement, schedule arrangement of following farm operation, and related arrangement, and so on. Hence, most of these information are usually one side flow from top to down.

Attendance of regular extension meeting is not all member of farmer group, usually limited to only key farmer and progressive farmers. After meeting, progressive farmers inform only key points of meeting to common farmers. There is a little group discussion in farmer group or sub-groups. Most of common farmer members have no channel to tell their questions, opinions, complains, problems, reasons of difficulties, real intention or needs, etc. There is no feedback flow from bottom to up. This may be one of the main reasons why there is some discrepancy between planned practices and actual activities.

It is very important to make betterment of internal communication for carrying out more group activities or joint operation especially in post harvest and marketing improvement activities.

6. AGRICULTURAL SUPPORT SERVICES

6.1 Rural Extension Center (BPP)

6.1.1 General Condition

The rural extension center (BPP) is responsible for agricultural extension services for farmers at field level. The daily extension services are carried out according to the training and visiting system (T&V system) by field extension workers (PPLs). In each survey area, the BPP covers one to four Kecamatans, about 4,000 ha to 16,000 ha of paddy field (details are shown in Table VI 6-1). Working area per one PPL in the BPP area are as follows:

Survey Area	BPP	Work Load per PPL	
		BPP Average (ha)	No. of Farmer Group in Survey Area
1. Telagasari	Telagasari	660	16
2. Bagor	Bagor	800	16
3. Mattiro Bulu	Manarang	990	32
4. Trimurjo	Trimurjo	670	13

One PPL covers 13 - 32 farmer groups in the survey areas and the work loads per PPL vary by the area.

6.1.2 PPL Activity

PPL activity consists of three (3) items, namely extension service at field level, regular meeting and preparation of working report. Actual activities of these items are conducted by the following guidelines :

(1) Extension Service at Field Level

Every PPL is requested to visit farmer groups in each extension area twice a week. There are 16 farmer groups under one PPL's working area by one PPL on the average. A PPL visits 2 farmer groups a day from

Monday to Thursday and whole 16 groups are visited in two weeks. Reporting and administrative works are conducted on Friday and training for PPL is done on Saturday. Main items for the field visitings are as follows:

- to transfer information and technology on farming practices to farmers,
- to conduct seasonal extension program,
- to assist farmers to use recommended farm inputs,
- to assist farmer groups to prepare list of members (RDK) and request list of farm inputs (RDKK),
- to conduct farmer group evaluation,
- to assist agricultural research trials at field level,
- to conduct demonstrations of proper farming and introduction of new technologies,
- to advise in the meetings of SUPRA INSUS Coordination Committee for farmer groups, and
- to strengthen farmer groups' organization and communication.

(2) Regular Meeting

Every PPL have an obligation to attend the regular meetings and to offer field information obtained through visitings.

(3) Preparation of Reports

Every PPL have an obligation to submit working reports, and chief of BPP compiles the evaluation/program reports in each crop season based on the working reports submitted. The working report consists of the following items:

- visiting schedule, extension work records and reaction from farmers contacted (weekly report),
- definite extension program for each extension area by using SUPRA INSUS program prepared by Kabupaten agricultural office (annual report),

- report on production, harvested area, inventory of varieties applied and crop budget analysis (seasonal report),
- report on activity of crop protection by farmers,
- monitoring report on application of recommended farming practices by farmers (seasonal report), and
- farmer groups evaluation reports.

(4) Main Constraints on Extension

PPL extension services to farmers in Telagasari, Trimurjo and Mattiro Bulu are not sufficiently done due to the other activities such as meeting with chief of Kecamatan, chief of Desa, KUD, etc. Furthermore, shortage of extension equipment for PPL, such as a motor-cycle, a photo camera, stationeries, etc. causes inefficiency on field work.

According to the interview to related PPL in the survey areas, trainings for extension workers in post harvest technology, agricultural mechanization, budgeting management and communication among farmer groups are not sufficient. The extension services for these items in the survey areas still have much room to be improved.

6.2 SUPRA INSUS Coordination Committee (POSKO)

POSKO is organized in order to formulate the concrete plans for the implementation of SUPRA INSUS program at the level of Province, Kabupaten, Kecamatan and Desa. In survey areas, main POSKO activities are as follows:

- monitoring of the program,
- identification of problems,
- suggestion to lower level of POSKO, and
- supervision of POSKO for farmer groups.

Main activities of POSKO at the level of Kecamatan and Desa are basically same as that of Kabupaten. However, promotion of credit

repayment is conducted by Desa and Kecamatan levels, and strengthening of linkage between KUD and farmer group is done by Kecamatan level.

Problems for the implementation of SUPRA INSUS program in the survey areas are discussed in Kabupaten POSKO meeting with the chairman of head of Kabupaten Food Crops Agricultural Services and conclusions/instructions are prepared. The frequency of the meeting is once in two weeks and the attendance are from Agricultural Office, BIMAS, KUD, BRI, etc. in Kabupaten. The main discussion items include SUPRA INSUS technology packages as follows:

- list of members (RDK) and request list of farm inputs (RDKK),
- SUPRA INSUS credit distribution,
- linkage between KUD and farmer groups,
- irrigation water distribution,
- labor shortage in harvesting season,
- recommendable post harvest activities by farmers,
- activities of KUD, and
- seed distribution and pest control.

Problems and the instructions discussed in the Kabupaten POSKO meeting in crop season of 1988 and 1988/89 are shown in Table VI 6-2.

6.3 Agricultural Credit

(1) Farm Credit Scheme (KUT)

Farm credit scheme (KUT) is available for farmers to buy farm inputs such as certified seeds, fertilizers, agro-chemicals, and growth hormone. This credit is characterized by a group (mass) credit and distributed to farmer groups. The interest rate is 1% per month or 12% per year and the repayment period is set at 7 months taking crop season and selling time of product into consideration.

Farmer groups without repayment of the credit are excluded from SUPRA INSUS program in the next season. Key farmers or landowners are obliged to repay for group members or tenants, when some of the group members fail to repay.

(2) Other Credits

Other credits on rice production shown in Table 3.6-1 limit credit debtors due to bureaucratic procedures and strict screening. Most of these credits are utilized by applicants on agro-industry.

Revolving fund credit for hand tractor and water pump has been applied to farmer groups under SUPRA INSUS program and this credit items are expanded to post harvest machinery such as power thresher recently. This credit is repaid after several cropping seasons.

Table VI 1-1 PRESENT ADMINISTRATIVE AND AGRICULTURAL CONDITION IN SURVEY AREA

KABUPATEN	KARAWANG		NGANJUK		PINRANG		LAMPUNG TENGAH	
KECAMATAN	TELAGASARI		BAGOR		MATTIRO BULU		TRIMURJO	
Survey area/related Desa (plan area)	Survey area	Cadas Kertajaya	Survey area	Selorejo	Survey area	Marannu	Survey area	Purwodadi
1. Area (km2)	50	3.9	52	2.9	161	20	58	5.2
2. Population/H.Hold								
Population	49,600	2,697	50,630	4,254	23,240	2,401	42,720	3,667
Population density (person/km2)	992	692	990	1,467	107	489	736	705
No. of household	12,860	672	11,900	985	4,770	120	8,210	759
Average family size	3.9	4.0	4.3	4.3	4.9	4.9	5.2	4.8
3. No. of Farm Household								
Owner Farmer	3,820	297	2,480	154	2,300	212	4,920	401
Tenant Farmer	2,100	121	5,720	563	1,840	241	1,120	124
Agricultural Labor	4,240	200	2,740	230	0	0	610	131
Total	10,160	618	10,940	947	4,140	453	6,650	656
Share to whole H.H (%)	79	92	92	96	87	93	81	86
4. Land use								
Paddy Field :								
Irrigated (ha)	3,960	290	1,940	197	3,950	1,357	3,900	324
Rainfed (ha)	-	-	160	-	1,380	-	300	-
Sub-total (ha)	3,960	290	2,100	197	5,330	1,357	4,200	324
Upland (ha)	20	93	160	56	10,610	623	300	165
Others (ha)	1,020	7	2,860	34	160	20	1,300	36
Total (ha)	5,000	390	5,120	287	16,100	2,000	5,800	525
5. No. of Farmer Groups								
SUPRA INSUS	102	8	44	3	122	32	53	5
Non-SUPRA INSUS	0	0	4	0	0	0	49	0
Total	102	8	48	3	122	32	102	5

Source : BPP, Camat office, Dinas Pertanian.

Table VI 1-2 PRESENT CONDITION OF INFRASTRUCTURE IN SURVEY AREA (1/2)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
1.Irrigation and Drainage				
(1) General	a. Telagasari area (9,540 ha), in the North Timur Irrigation Area (41,260 ha), of the Jatiluhur Irrigation System. b. Main canal was constructed in 1970's, and was rehabilitated in 1973-84. c. During rehabilitation, tertiary canals and part of quartery canals were constructed and Water User's Association was established.	a. Part of the Brantas Irrigation System. Water source is Bunin river, tributary of Widas river.	a. Part of the Sadan Irrigation System (56,000 ha).	a. Upper 3 irrigation areas (26,900 ha) out of 6 areas in Way Sekampun Irrigation System (51,400 ha). b. Main canal was completed in 1935, and was rehabilitated in 1980-1985. c. During rehabilitation, tertiary and quartery canals were constructed d. Cropping intensity in dry season is 50% due to no reservoirs.
(2) Present Condition of On-farm Level				
-Irrigation Block (ha) (downstream from tertiary canal)	10-200 (Average 120)	Average 110	Average 110 -	20-230 (Average 30)
-Plot (topography)	±0.1 (level)	- -	- -	0.2-0.3 (gently sloping)
-Present Condition of canals of On-farm Level	a. Insufficient maintenance of tertiary canals. b. Quartery canals and related structures are not functioned due to sedimentation and damage. c. Mainly plot-to-plot irrigation. Irrigation water is not enough in terminal plots d. Drainage condition is poor due to no drainage canals.	a. Maintenance of tertiary canals is well.	a. Maintenance of canals is carried out by farmers groups. Irrigation water is short in dry season, because of uneven allocation of water.	a. Tertiary and quartery canals are well constructed. b. Partly plot-to-plot irrigation. Plot-to-plot irrigation is small area in the area where quartery canals are equipped. c. Drainage canals have been constructed by farmers in the part of the area. Excess water can be drained through irrigation canals and plot-to-plot system.

Table VI 1-2 PRESENT CONDITION OF INFRASTRUCTURE IN SURVEY AREA (2/2)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
2.Farm Road				
(1) General	Kabupaten road passing in the center of Kecamatan and parts of branch road are paved. Others are graveled or unpaved. Partly inaccessible in rainy season due to mudy condition.	Main roads are paved.	Main roads are paved.	2 Kabupaten roads passing east to west in the northern and southern Kecamatan and branch road connecting the above 2 road are paved. While other roads are unpaved, condition is good.
(2) Farm Road	Other than the maintenance roads along canals, main roads are foot path like bounds in the field. Transportation depends on man-power.	No problem on transportation of products and inputs in on-farm level. Farm roads which bicycles can pass are under construction. Partly, roads which hand-tractor can access (2 m) were constructed.	Problem on transportation of products and inputs. Density of farm roads is low, and mostly unpaved.	Farm roads which bicycles can pass are under construction. Partly, roads which hand-tractor can access (2 m) were constructed.

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (1/7)

Item		Kab. Karawang Kec. Telagasari		Kab. Nganjuk Kec. Bagor		Kab. Pinrang Kec. Mattiro Bulu		Kab. Lampung Kec. Trimurjo	
1.Land Use in the Average Year (ha)									
(1) Paddy Field	-Irrigated	3,960	(-)	1,940	(-)	3,950	(-)	3,900	(-)
	-Rainfed	0	(-)	160	(-)	1,380	(-)	300	(-)
	Subtotal	3,960	(79%)	2,100	(41%)	5,330	(33%)	4,200	(72%)
(2) Upland Field		20	(0%)	160	(3%)	10,610	(66%)	300	(5%)
(3) Others		1,020	(21%)	2,860	(56%)	160	(1%)	1,300	(22%)
(4) Total		5,000	(100%)	5,120	(100%)	16,100	(100%)	5,800	(100%)
(5) Area covered by SUPRA INSUS		100% of irrigated paddy field		70% of irrigated paddy field		60% of irrigated paddy field		85% of irrigated paddy field	
2.Paddy Production (1988/89)		Dry Season	Wet Season	Total	Dry Season	Wet Season	Total	Dry Season	Wet Season	Total	Dry Season	Wet Season	Total
(1) Irrigated land	Harvested Area (ha)	3,960	3,960	7,920	1,550	1,750	3,300	2,700	3,950	6,650	3,900	3,900	7,800
	Average Yield (t/ha)	6.5	6.8	6.6	6.3	6.5	6.4	5.8	5.8	5.8	5.2	5.7	5.4
	Production (1000 ton)	25.7	26.9	52.6	9.8	11.4	21.2	15.7	22.9	38.6	20.3	22.2	42.5
(2) Rainfed land	Harvested Area (ha)	-	-	-	-	160	160	-	540	540	-	300	300
	Average Yield (t/ha)	-	-	-	-	2.0	2.0	-	1.5	1.5	-	1.5	1.5
	Production (1000 ton)	-	-	-	-	0.4	0.4	-	0.8	0.8	-	0.5	0.5
3. Cropping Pattern in the Irrigated Paddy Field		Dry Season	Wet Season	Total	Dry Season	Wet Season	Total	Dry Season	Wet Season	Total	Dry Season	Wet Season	Total
(1) Cropping Intensity of Paddy		100%	100%	200%	80%	90%	170%	44%	100%	144%	100%	100%	200%
								Intensity in dry season is average of past 3 years. (Intensity tends to increase recently.)			Intensity in dry season decreases to 50% once 3 years.		
(2) Cropping Intensity of Upland Crops													
	-Plan	65%	-	65%	10%	60%	70%	-	-	-	20%	-	20%
	-Actual	0.3%	-	0.3%	10%	60%	70%	-	-	-	2%	-	2%
					Sugarcane is planted in 10% of the total paddy area.								
(3) Harvesting Season of Paddy		Dry Season		Wet Season	Dry Season		Wet Season	Dry Season		Wet Season	Dry Season		Wet Season
	-Plan	July (1 month)		Feb.25-Mar.25 (1 month)	Jul.18-Aug.5 (0.8 month)		Mar.7-30 (0.8 month)	Aug.15-Sep.15 (1 month)		Feb.15-Mar.15 (1 month)	Aug.15-Sep.15 (1 month)		April (1 month)
	-Actual	Jul.10-Aug.25 (1.5 month)		Feb.15-Mar.30 (1.5 month)	Jul.18-Aug.10 (0.9 month)		Mar.4-Apr.10 (1.3 month)	Aug.3-Sep15 (1.4 month)		Feb.15-Mar.30 (1.5 month)	Aug.7-Sep.20 (1.5 month)		Mar.15-May 15 (2 month)

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (2/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(4) General	a. 75% of farmers have not operated farming practices according to the schedule. b. Harvesting is delayed cause of delayed planting (due to improper water management) and labour shortage in harvesting period.	a. 60% of farmers properly carry out farming practices according to the schedule. b. Due to labour shortage, land preparation and transplanting are delayed.	a. Large land owners didn't cultivate in dry season against the plan, and this resulted in low cropping intensity. b. Due to labour shortage for land preparation and delaying previous dry season crop, planting in rainy season is behind the schedule.	a. Dry season crop delays due to shortage of animal power and irrigation water for land preparation. b. Rainy season crop delays due to shortage of animal power and irrigation water for land preparation.
4. Farming Practice	Dry Season / Wet Season	Dry Season / Wet Season	Dry Season / Wet Season	Dry Season / Wet Season
(1) Variety -Plan	IR64 / Cisadane	IR36 / IR36	IR64 / IR36/42	IR64 / Cisadane(20%) IR64/42(80%)
-Actual	IR64(100%) / Cisadane(90%) IR64(10%)	IR36(100%) / IR36(100%)	IR64(100%) / IR36(80%) IR42(20%)	IR64 / Cisadane(20%) IR64/42(80%)
	Recommended variety in rainy season is Cisadane as disease tolerant variety, but farmers prefer IR64, high yielding variety.			Recommended variety in rainy season is Cisadane as disease tolerant variety, but farmers prefer IR64, high yielding variety.
-Use of Certified Seeds	98% / 98%	59% / 98%	80% / 90%	62% / 62%
(2) Fertilizer -Actual	40% of farmers apply ammonium sulfate inadequately.	Application of fertilizer is carried out as planed. Organic fertilizer is recommended to apply 5 t/ha for rainy season crop, 40% of farmers apply the planned dosage.	Generally, dosage of ammonium sulfate and KCl is short (8% for ammonium sulfate and 16% for KCl against the plan).	60% of farmers apply urea insufficiently.
(3) Agro-chemicals -Actual	Insufficient application of agro-chemicals due to delay of distributing materials.	Insecticide is applied as planned. Rodenticide is not applied as planned. Only Hitorasil is applied as Hormone.	Insecticide is applied by 30% of planned amount. Rodenticide is not applied due to high price. Fungicide is not applied against recommendation Only Sitocine is applied as Hormone.	Agro-chemicals is applied by planned amount. It is insufficient for 65% of farmers to observe insects and disease.

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (3/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
5. Farm Operation System				
(1) Land Preparation and Soaking	Custom land preparation by hand tractor. (animal power is not applied.)	Custom land preparation by hand tractor. Operators are labour force in the villages. 1 ha can be finished in 1 day.	50% is custom land preparation by hand tractor, and another 50% is carried out by animal power. Operators are labour force in the villages. Working efficiency is 0.6 ha/day.	a. Land preparation by animal power. (custom land preparation by hand tractor is partially started.) b. Land preparation is not sufficient (20% of farmers).
(2) Transplanting	Contract with a labour group (20-40 persons). Owner and tenant farmers have contracts with labour groups in villages.	Transplanting of 1 ha can be finished in 1 day by about 20 females labours.	Family labour force is exchanged each other under the Gotong Royong system. 1 ha can be transplanted in 1 day by about 20 females labours.	Contract with village transplanting group (10 females and 2 males, owner/tenant farmers and labour in the village). Farmers groups and labour groups help each other (Gotong Royong system).
(3) Weeding	a. More than 2 times according to the instruction. b. By labours in free of charge (Cheblokan), by labours with payment (Gropyokan). c. There is no case that owner or tenant farmers weed by themselves.	Contract with village labour force. There is no case that owner or tenant farmers weed by themselves.	Usually owner or tenant farmers weed by themselves. Supplementary labour force is supplied through labour exchange among farmers in Gotong Royong system.	a. More than 2 times farmers to the instruction. b. Owner or tenant farmers carry out weeding with other farmers (12 persons/ha/ time). Other farmers get wages. c. Farmers groups and labour groups help each other (Gotong Royong system).

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (4/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(4) Application of Fertilizers and Agro-chemicals	Contract with labour groups.	Usually owner or tenant farmers apply by themselves. Application method and time are carried out according to the instructions of the extension workers.	Usually by owner or tenant farmers. Processes like application method and time are carried out according to the instructions of the extension office.	Usually by owner or tenant farmers carry out by themselves.
(5) Harvesting				
1) Harvesting System	Gropyokan (10-20%) Cheblokan (80-90%)	Gropyokan (50%) Contract (50%)	Gropyokan (40%) Contract (60%)	Gropyokan (90%) Cheblokan (10%)
2) Allotment of products	1/7 of harvests in both systems.	1/7 of harvests for Gropyokan, Rp 20 per kg for contract.	1/11 of harvests for Gropyokan, Rp 15 per kg for contract.	1/7 of harvests in both systems
3) Operation Method	1. Reaping at the middle part of rice plants. 2. Binding rice plants in 2-3 hills, and put on the hills reaped 3. Collecting rice plants and dumping on the bounds. 4. Accumulating rice plants at the threshing spots. 5. Threshing by beating on the wooden plates using threshing sheet (3.6m x 2.5m). 6. Winnowing on the vinyl sheets using bamboo bowl. - Winnowing is not sufficient and much impurities are contained. 7. Packing paddy.	1. Male labours reap by common sickle at the middle to low part (12-15 cm from ground). 2. Every 35-40 hills are temporarily placed on the reaped hills. (Reaping 7 hills/time on average.) 3. Reaped paddy are collected in the center of each plot. 4. Threshing is carried out in the same day. 5. 80% is threshed by pedal thresher, and another 20% is by beating. All operations is done by labours. - 5m x 5m sheet is used for the pedal thresher. - Rental charge of pedal thresher:Rp 5,000/day. - 2 male labours operate 1 pedal thresher.	1. Male labours reaps by common sickle at the middle to low part. (12-15 cm from ground.) 2. Every 120 hills are temporarily placed on the reaped hills (reaping 6 hills/time on average). 3. Reaped plants are divided into 3 to 4 portions, and are accumulated in each plot. 4. Threshing is carried out in the next day of reaping. 5. Females thresh paddy by beating. - Vinyl sheet (2.8m x 2.1m) - Wooden plates for beating 6. Winnowing on the sheet.	1. Reaping at the middle part of rice plant. 2. Binding rice plants in 2 to 3 hills, and put on the hills reaped 3. Collecting rice plants and dumping on the bounds 4. Gathering rice plants at the threshing spot. 5. 10% is threshed by pedal thresher, and another 90% is beating. - Pedal thresher.is wooden and home-made. - Pedal threshes are owned by limited farm household. - Vinyl sheet (5m x 5m) - Wooden plates for beating

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (5/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
3) Operation Method	8. Transportation to the main roads. - on the backs of labours. - 1 back (75-90kg)/time. 9. Transportation to the farmers' house yard by bicycle or by cart, and dividing 9'. Dividing at the main road-side and sell to middleman or millers	6. Winnowing on the sheet. 7. Packing threshed paddy (70-80 kg per jute bag) 8. Transportation to main road by man power. Transportation to farm yard is by man power cart (500kg capacity) in the area of good road condition (20%), and by bicycle in the area of worse road condition. 9. Working efficiency of 1. to 8. is 0.31 ha/day by 10 persons, or at 0.125 ha/day by 4 persons.	7. Packing in the plastic bag (90 kg per bag). 8. Transportation by horse to assembly points at the main road side. - Rp 11/km under 2 km - Rp 13-15/km over 2 km - 4 bags (360 kg) in one time (2 horses x 2 bags x 90 kg) 9. Paddy is sold at the assembly points at the road side (mainly rainy season).	6. Winnowing on the vinyl sheet using bamboo bowl. - winnowing is not sufficient and much impurities contain. 7. Packing threshed paddy. 8. Transportation to the main road and farmers house yards by bicycle (2-3 bags/time) through farm road. 9. Division at the farm yard. 9' not many cases of dividing at the main road and sell to middleman or millers.
(6) General	a. Labour force is short for harvesting rainy season paddy due to long rainy days. b. Labour force is sufficient for harvesting dry season paddy. c. High harvesting loss and low paddy quality in rainy season are caused by the inefficient farm operations due to insufficient drainage in the field.	a. Labour force stays in 47% of the area, and is enough in this area. In the other 53%, labour force is only available after completing in the above area, and labour force is short for harvesting rainy season paddy and land preparation in dry season. b. Pedal threshers decrease the opportunities for female labour force to join harvesting.	a. Large owner farmers hire the labour force of small holders and tenants by contract. Owner farmers use family members and sometimes hire labours from other villages. Labour force is short. b. Due to shortage of irrigation water and labour force, land preparation is usually delayed.	a. Labour force is always short for harvesting rainy season paddy (difficult to harvest timely). b. Labour force is sufficient for harvesting dry season paddy, because labour (mainly relatives) is available from rainfed area. c. High harvesting loss and low paddy quality in rainy season are caused by the inefficient farm operation due to insufficient drainage in the field.

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (6/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
6. Water Management (Tertiary canal and down stream)				
(1) Personnel in Charge of Water Management	Irrigation inspector (Uru Uru) of Desa office and labour group. *Chief of water user's association (P3A) is elected by farmers. Usually, chief of P3A and Uru Uru is the same person.	Existing water user's association (HIPPA) is organized in village level. 1 representative is elected in each farmers group, and one of representatives are selected as a chief of HIPPA. 1 unit of HIPPA is th plots of the farmers group.	a. P3A is organized, and a chief is elected from the farmers group. Usually, a group leader is elected as an inspector. b. P3A is the same organization as the farmers group, and the names of farmers groups are applied as the block names in on-farm level.	a. Irrigation inspector (Ili Ili) of Desa office and several farmers. P3A has not organized yet.
(2) Water Management	a. Uru Uru control the gate of tertiary canals. (Quarterly canals have not been equipped yet.) b. In the plot-to-plot irrigation area, irrigation blocks are adjusted by farmers. (Adjustment is not so sufficient that plots near the terminal area tend to be short of irrigation water).	a. Irrigation inspectors control the gate of tertiary canals. b. Farmers groups divide paddy field into blocks, and prepare schedule for irrigation and drainage. In the dry season, farmers make a plan for crops to be planted in each block and allocate irrigation water.	a. Irrigation inspector control the gate of tertiary canals. b. Plot-to-plot irrigation. c. In the rainy season, a part of area is under poor drainage condition. d. In the dry season, water allocation is not so fair that much area can not be planted.	a. Irrigation inspectors control the gate of tertiary and quarterly canals. b. In the plot-to-plot irrigation area, irrigation blocks are adjusted by farmers. (As plot-to-plot irrigation area is limited due to undulating topographic condition, it is easy to adjust irrigation area among farmers.)

Table VI 2-1 PRESENT CONDITION OF AGRICULTURE IN SURVEY AREA (7/7)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(3) Maintenance	a. In the active P3A area, tertiary canals are repaired by farmers groups through provision of labour force before starting irrigation in each season. b. P3A is generally inactive, and it is not sufficient to repair tertiary canals. c. Quarterly canals is not functioned due to sedimentation.	a. Well maintenance of main to tertiary canals.	a. Tertiary and quarterly canals are maintained by farmers groups volùntarily.	a. Tertiary and quarterly canals are maintained as required by farmers group through provision of labour force before starting irrigation in each season. b. Well maintenance of tertiary and quarterly canals.
(4) Water Charge	a. 15-20 kg of paddy/ season/ha b. Water charge is collected at harvesting time in every season, and is disbursed as payment for inspectors and labours.	a. Rp 3,000/year/ha.	a. 25 kg of paddy/year/ha.	a. 15-20 kg of paddy/year /ha. b. Water charge is collected at harvesting time in every season, and is disbursed as payment for inspectors/ labours and for repairing materials (cement and stone).

Table VI 3-1 PRESENT LABOR REQUIREMENT

(unit: man-day/ha)

ITEM		Telagasari			Bagor			Mattiro Bulu			Trimurjo		
		Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Man Power (m/d)													
1. Land Preparation *		0	8	8	2	11	13	11	4	15	10	2	12
2. Nursary Preparation		1	4	5	5	0	5	5	0	5	5	0	5
3. Transplanting		1	12	13	0	15	15	11	3	14	10	2	12
4. Fertilizer Application		1	4	5	2	4	6	5	0	5	6	0	6
5. Spraying		1	1	2	2	2	4	4	0	4	4	0	4
6. Weeding		0	32	32	0	26	26	20	0	20	24	0	24
7. Water Management		1	1	2	2	0	2	2	0	2	2	0	2
8. Harvesting/Threshing	WS	1	37	38	2	33	35	20	15	35	20	15	35
	DS	1	31	32	2	28	30	15	15	30	15	15	30
Total	WS	6	99	105	15	91	106	78	22	100	81	19	100
	DS	6	93	99	15	86	101	73	22	95	76	19	95
Animal Power(a/d)													
1. Land Preparation		0	0	0	0	0	0	0	3	3	4	2	6
Mechanical Power(mc/d)													
1. Land Preparation		0	2	2	0	2	2	0	1	1	0	0	0

Remarks: *= including operator of animal and machine
m/d=man-day
a/d=animal-day
mc/d=machine-day

Source: BPP
Farmers' Interview

Table VI 3-2 RECOMMENDED AND ACTUAL INPUTS APPLICATION

Item	Unit	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
		Recom.	Actual	Recom.	Actual	Recom.	Actual	Recom.	Actual
a) Seed	(kg)	30	30	40	40	30	30	30	30
b) Fertilizer									
Urea	(kg)	200	200	250	225	200	150	200	150
TSP	(kg)	100	100	100	100	100	100	150	150
KCI	(kg)	100	100	100	75	100	60	100	100
ZA	(kg)	100	0	100	100	75	0	100	100
c) Agro-chemical /1									
Insecticide	(kg)	-	10 /2	-	21 /2	-	10 /2	-	10 /2
- Furadan		20	-	21	-	34	-	14	-
- Dharmafur		20	-	21	-	34	-	-	-
- Currater		20	-	21	-	34	-	-	-
- Petroban		-	-	21	-	-	-	-	-
Herbicide	(lit.)								
- Ronstar		0	0	0	0	2	1	2	0
- DMA-6		0	0	0	0	1	0	0	0
Rodenticide	(kg)								
- Klerat RMB		2	0	2	0	2	0	2	0
Fungicide	(kg)								
- Benlate		0	0	0.15	0	1	0	0	0
- Delsen		0	0	0	0	1	0	0	0
- Robcida		0	0	0	0	1	0	0	0
Hormone	(lit.)								
- Sitozyme		0.50	0.50	0.50	0	0.50	0.50	0	0
- Dharmasri		0.09	0	0.09	0	0.09	0	0.09	0.09
- Ergostem		0	0	0	0	0	0	0.45	0
- Hydrasil		1.50	0	1.50	1.50	1.50	0	1.00	0

Remarks : /1 one kind of agro-chemiclal is applied out of recommended ones.
/2 Kind of insecticide is not specified

Source :BPP

Table VI 3-3 PRESENT CROP BUDGET PER HECTARE

Item	Unit	TELAGASARI W.S /1 Q'ty	Unit Price (Rp)	Amount ('000Rp)	TELAGASARI D.S /2 Q'ty	Unit Price (Rp)	Amount ('000Rp)	BAGOR W.S Q'ty	Unit Price (Rp)	Amount ('000Rp)	BAGOR D.S Q'ty	Unit Price (Rp)	Amount ('000Rp)
A. Gross Income													
- Yield	(kg)	6,800	200	1,360	6,500	251	1,632	6,500	187	1,216	6,300	231	1,455
B. Production Cost													
1) Farm Input													
- Seed	(kg)	30	450	14	30	450	14	40	450	18	40	450	18
- Fertilizer													
Urea	(kg)	200	165	33	200	165	33	225	165	37	225	165	37
TSP	(kg)	100	170	17	100	170	17	100	170	17	100	170	17
KCI	(kg)	100	165	17	100	165	17	75	165	12	75	165	12
ZA	(kg)	0	-		0	-		100	165	17	100	165	17
- Agro-chemical													
Insecticide	(lit)	10	1,500	15	10	1,500	15	21	1,500	32	21	1,500	32
Herbicide	(lit)	0	-		0	-		0	-		0	-	
Rodenticide	(kg)	0	-		0	-		0	-		0	-	
Hormone	(lit)	0.5	50,000	25	0.5	50,000	25	1.5	10,000	15	1.5	10,000	15
Sub-Total				120			120			148			148
2) Labor	(man-day)												
Pre-harvest /3		60	2,500	150	60	2,500	150	56	2,500	140	56	2,500	140
Post-harvest /4		-	-	189	-	-	227	-	-	164	-	-	196
3) Animal	(animal-day)	0	-		0	-		0	-		0	-	
4) Machinery	(machine-day)	2	27,500	55	2	27,500	55	2	25,000	50	2	25,000	50
5) Irrigation fee	(kg)	10	200	2	10	251	3	10	187	2	10	231	2
6) Land tax	-	-	-	23	-	-	23	-	-	20	-	-	20
7) Land rent	-	-	-	680	-	-	816	-	-	608	-	-	728
Total	-Owner /5			539			577			523			556
	-Tenant /6			1,136			1,310			1,037			1,190
C. Net Return (A-B)	-Owner			821			1,055			692			899
	-Tenant			224			321			178			266

Item	Unit	MATTIRO BULU W.S Q'ty	Unit Price (Rp)	Amount ('000Rp)	MATTIRO BULU D.S Q'ty	Unit Price (Rp)	Amount ('000Rp)	TRIMURJO W.S Q'ty	Unit Price (Rp)	Amount ('000Rp)	TRIMURJO D.S Q'ty	Unit Price (Rp)	Amount ('000Rp)
A. Gross Income													
- Yield	(kg)	5,800	174	1,009	5,800	194	1,125	5,700	176	1,003	5,200	244	1,269
B. Production Cost													
1) Farm Input													
- Seed	(kg)	30	450	14	30	450	14	30	450	14	30	450	14
- Fertilizer													
Urea	(kg)	150	165	25	150	165	25	150	165	25	150	165	25
TSP	(kg)	100	170	17	100	170	17	150	170	26	150	170	26
KCI	(kg)	60	165	10	60	165	10	100	165	17	100	165	17
ZA	(kg)	0	-		0	-		100	165	17	100	165	17
- Agro-chemical													
Insecticide	(lit)	10	1,500	15	10	1,500	15	10	1,500	15	10	1,500	15
Herbicide	(lit)	1	3,500	4	1	3,500	4	0	-		0	-	
Rodenticide	(kg)	0	-		0	-		0	-		0	-	
Hormone	(lit)	0.5	50,000	25	0.5	50,000	25	0.09	150,000	14	0.09	150,000	14
Sub-Total				109			109			125			125
2) Labor	(man-day)												
Pre-harvest /3		3	2,000	6	3	2,000	6	2	2,000	4	2	2,000	4
Post-harvest /4		-	-	39	-	-	44	-	-	61	-	-	78
3) Animal	(animal-day)	3	12,000	36	3	12,000	36	2	12,000	24	2	12,000	24
4) Machinery	(machine-day)	1	32,500	33	1	32,500	33	0	-		0	-	
5) Irrigation fee	(kg)	10	174	2	10	194	2	10	176	2	10	244	2
6) Land tax	-	-	-	15	-	-	15	-	-	15	-	-	15
7) Land rent	-	-	-	505	-	-	563	-	-	502	-	-	634
Total	-Owner /5			239			244			231			248
	-Tenant /6			674			737			655			805
C. Net Return (A-B)	-Owner			770			881			772			1,020
	-Tenant			335			388			348			464

Remarks: /1 = Wet Season (Oct. - Mar.1987/1988)
/2 = Dry Season (Apr.-Sep.1988)
/3 = excluding reaping/threshing
/4 = reaping/threshing
/5 = Owner's Production cost [1) +2) +3) +4) +5) +6)]
/6 = Tenant's Production cost[1)/2 +2) +3) +4) +5) +7)]

Source: Farmers' Interview Survey, BPP

Table VI 3-4 PRESENT FARM BUDGET

(Unit:'000 Rp)

Item	TELAGASARI			BAGOR			MATTIRO BULU /2		TRIMURJO		
	Owner	Tenant	A.L /1	Owner	Tenant	A.L	Owner	Tenant	Owner	Tenant	A.L
Family Size	4.1	4.1	4.1	4.3	4.3	4.3	4.9	4.9	4.9	4.9	4.9
Farm Size(ha)											
Operated	0.67	0.67	-	0.24	0.24	-	0.95	0.95	0.65	0.65	-
Leased to other farme	0.37	-	-	0.54	-	-	0.77	-	0.14	-	-
Crop Intensity (%)											
Paddy (WS)	100	100	-	90	90	-	100	100	100	100	-
Paddy (DS)	100	100	-	80	80	-	80	80	100	100	-
Palawija	0	0	-	70 /3	70 /3		50	50	0	0	-
Sugarcane	-	-	-	10	10	-	-	-	-	-	-
I. Farm Income											
a. Paddy											
-Gross income	2,005	2,005	-	542	542	-	1,814	1,814	1,477	1,477	-
-Production cost	748	1,639	-	220	452	-	412	1,200	311	949	-
-Net income	1,257	366	-	322	90	-	1,401	613	1,165	528	-
b. Palawija											
-Net income	-	-	-	116	116	-	327	327	-	-	-
c. Sugarcane											
-Net income	-	-	-	57	16	-	-	-	-	-	-
II. Land rent from tenant	509	-	-	641	-	-	738	-	142	-	-
III Income from On-farm Employment	-	-	672	-	-	505	-	-	-	-	335
IV. Non-farm income	419	412	196	451	489	239	18	30	24	162	217
V. Total Income (I + II + III + IV)	2,185	778	868	1,588	710	744	2,484	970	1,331	690	552
VI. Living Expense	2,065	749	849	1,480	667	703	2,145	925	1,184	662	546
a. Food	846	476	547	659	440	449	890	585	687	423	391
-Rice	206	206	206	159	159	159	200	200	198	198	198
-Other food	640	270	341	500	281	290	690	385	489	225	193
b. Other items	1,219	273	302	821	227	254	1,255	340	497	239	155
VII Net Reserve(V-VI)	120	29	19	108	43	41	339	45	147	28	6

Note: /1 A.L = Agricultural Laborer
/2 No agricultural laborers exist in Mattiro Bulu
/3 10% as dry season crop and 60% as third crop

Source: Farmers' interview survey
CBS

Table VI 3-5 PRESENT SEASONAL LABOR REQUIREMENT PER HA (1/2)

TELAGASARI

(man/day/ha)

Laobr Req. /1	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec		
WS DS	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Land Preparation 8 8								0.25	0.25	0.25	0.25																		0.25	0.25	0.25	0.25					
Nursary Preparation 5 5								0.16	0.16	0.16	0.16																		0.16	0.16	0.16	0.16					
Transplanting 13 13											0.41	0.41	0.41	0.41																	0.41	0.41	0.41	0.41		
Fertilizer Application 5 5	0.08	0.08	0.08								0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08														0.08	0.08	0.08	0.08	0.08
Spraying 2 2	0.03	0.03	0.03	0.03								0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03														0.03	0.03	0.03	0.03
Weeding 32 32	0.50	0.50	0.50	0.50								0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50														0.50	0.50	0.50	0.50
Water Management 2 2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02										0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Harvesting/Threshing 38 32						0.79	0.79	0.79	0.79	0.79	0.79									1.00	1.00	1.00	1.00														
Total 105 99	0.63	0.63	0.63	0.55	0.02	0.81	0.81	1.22	1.22	1.22	1.70	1.04	1.04	1.04	0.63	0.63	0.63	0.63	0.55	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.91	1.03	1.03	1.03	0.63

Remark: /1= Labor Requirement(man-day/ha)

BAGOR

(man/day/ha)

Labor Req. /1	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec		
WS DS	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Land Preparaion 13 13										0.43	0.43	0.43																				0.49	0.49	0.49		
Nursary Preparation 5 5										0.17	0.17	0.17																				0.19	0.19	0.19		
Transplanting 15 15	0.56												0.50	0.50	0.50																				0.56	0.56
Fertilizer Application 6 6	0.08	0.08	0.08	0.08	0.08	0.08							0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08															0.08	0.08
Spraying 4 4	0.06	0.06	0.06	0.06	0.06	0.06	0.06						0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05																0.06
Weeding 26 26	0.37	0.37	0.37	0.37	0.37	0.37	0.37						0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33																0.37
Water Management 2 2	0.02	0.02	0.02	0.02	0.02	0.02	0.02				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02										0.02	0.02	0.02	0.02	0.02	0.02
Harvesting/Threshing 35 30								0.98	0.98	0.98	0.98										1.00	1.00	1.00														
Total 106 101	1.09	0.53	0.53	0.53	0.53	0.53	0.44	0.98	0.98	1.58	1.60	0.62	0.97	0.97	0.97	0.47	0.47	0.47	0.47	0.47	1.02	1.02	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.69	0.69	0.67	1.09

Remarks: Cropping intensity is 90% in wet season and 80% in dry season
/1= Labor Requirement(man-day/ha)

Table VI 3-5 PRESENT SEASONAL LABOR REQUIREMENT PER HA (2/2)

MATTIRO BULU (man/day/ha)

Labor Req. /1	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec		
WS DS	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Land Preparation 15 15										0.38	0.38	0.38	0.38															0.47	0.47	0.47	0.47					
Nursary Preparation 5 5										0.13	0.13	0.13	0.13															0.16	0.16	0.16	0.16					
Transplanting 14 14														0.47	0.47	0.47																0.58	0.58	0.58		
Fertilizer Application 5 5	0.08	0.08	0.08											0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06											0.08	0.08	0.08	0.08	0.08
Spraying 4 4	0.06	0.06	0.06	0.06											0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05											0.06	0.06	0.06	0.06
Weeding 20 20	0.31	0.31	0.31	0.31											0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25											0.31	0.31	0.31	0.31
Water Management 2 2	0.02	0.02	0.02	0.02	0.02					0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02						0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Harvesting/Threshing 35 30					0.88	0.88	0.88	0.88	0.88													0.75	0.75	0.75	0.75											
Total 100 95	0.47	0.47	0.47	0.39	0.89	0.88	0.88	0.88	0.88	0.52	0.52	0.52	0.52	0.54	0.84	0.84	0.38	0.38	0.38	0.38	0.38	1.07	0.75	0.75	0.75	0.00	0.00	0.64	0.64	0.64	0.64	0.68	1.05	1.05	0.47	0.47

Remarks: /1= Labor Requirement (man-day/ha)
Cropping intensity is 100% in wet season and 80% in dry season

TRIMURJO (man/day/ha)

Labor req. /1	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec		
WS DS	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Land Preparation 12 12											0.38	0.38	0.38	0.38																		0.38	0.38	0.38	0.38	
Nursary Preparation 5 5											0.16	0.16	0.16	0.16																		0.16	0.16	0.16	0.16	
Transplanting 12 12	0.38	0.38												0.38	0.38	0.38	0.38																		0.38	0.38
Fertilizer Application 6 6	0.09	0.09	0.09	0.09	0.09	0.09								0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09														0.09	0.09
Spraying 4 4	0.06	0.06	0.06	0.06	0.06	0.06	0.06								0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06															0.06
Weeding 24 24	0.38	0.38	0.38	0.38	0.38	0.38	0.38								0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38															0.28
Water Management 2 2	0.02	0.02	0.02	0.02	0.02	0.02	0.02				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02											0.02	0.02	0.02	0.02	0.02
Harvesting/Threshing 35 30								0.73	0.73	0.73	0.73	0.73	0.73										0.94	0.94	0.94	0.94											
Total 100 95	0.93	0.93	0.55	0.55	0.55	0.55	0.46	0.73	0.73	0.73	1.28	1.28	1.28	1.02	0.93	0.93	0.93	0.55	0.55	0.55	0.55	0.46	0.94	0.94	0.94	0.94	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.55	1.02	0.93

Remarks: /1= Labor Requirement(man-day/ha)

Table VI 4-1 MARKETING CONDITION IN SURVEY AREA

Item	Kabupaten Karawang Kecamatan Telagasari	Kabupaten Nganjuk Kecamatan Bagor	Kabupaten Pinrang Kecamatan Mattiro Bulu	Kabupaten Lampung Kecamatan Trimurjo
1 Farmers' Selling Activity				
(1) Wet Season	a. Selling paddy after harvesting soon (Major) - Non-dry and non-clean paddy - Farm side (fields near roads) - Farmgate (fields far from roads, after trasporting from field to house)	a. Selling paddy after harvesting soon. (About 60% of farmers) - Non-dry and non-clean paddy - Farmgate (major)	a. Selling paddy after harvesting soon. (Major) - Non-dry and non-clean paddy - Loading yards along main roads (constructed by farmer groups, without drying floor) - Farmers in upper part of the area (early harvesting) sell wet paddy. b. Farmers in late harvesting area sell after drying paddy.	a. Selling paddy after harvesting soon. (60% of products) - Non-dry and non-clean paddy - Farmgate b. Selling rice after drying and milling at small scale rice mill in village. (20% of products)
(2) Dry Season	a. Selling paddy after harvesting soon. (Small scale and tenant farmers) b. Selling dry paddy or ice after milling at small scale rice mills in village.	a. Selling paddy after harvesting soon. (About 50% of farmers) - Farmers without warehouse. - Farmers in early harvesting area. b. Selling dry paddy or rice after milling (After one month from harvesting).	a. Same as Bagor. b. Selling dry paddy or rice after milling, (After harvesting soon).	a. Selling paddy after harveting soon. (20% of products) b. Selling rice drying and milling (60% of products)
(3) Both Seasons	a. No cooperative selling activity by farmer groups b. Farmers holding fields near roads have many chances to choose middlemen. (Easy carrying paddy from field) c. Farmers holding field far from roads usually ask middlemen or rice millers to pick up paddy. (Before selling paddy, farmers show samples and negotiate).	a. No cooperative selling activity by farmer groups. b. Joint utilization of warehouses by farmers for emergency stock. - 75kg of paddy/member c. Paddy is usually sold at farmgate because farm roads are well facilitated.	a. No cooperative selling activity by farmer groups. b. Due to high transportation cost from fields to farmgates, especially in wet season, paddy is sold at loading yards. Most of them exist at the area accessible to the main road to Pinrang, c. Private rice millers association is organized and exchanging paddy market informations. Some of rice millers who are holding paddy land are members of farmers groups.	a. No cooperative selling activity by farmer groups. b. Joint utilization of warehouses by farmers for saving and lending to other farmers. - 100 kg of paddy/member c. Paddy is usually sold at farmgate because farm roads are well facilitated.
2 Channel for Selling				
(1) Paddy	a. Middlemen in and out of the Kecamatan b. KUDs have no rice mills and do not procure paddy	a. Midllemen in the Kecamatan and from Nganjuk market. b. One KUD has rice mills, while does not procure paddy (custom milling only).	a. Rice millers association and middlemen in the Kecamatan and middlemen from Pinrang market. b. Two KUDs have rice mills, while does not procure paddy (custom milling only).	a. Midllemen from outside of the Kecamatan or large scale rice millers in the Kecamatan (Transport by middlemen and rice millers). b, One KUD has rice millings, while does not procure paddy (custom milling only).
(2) Rice	a. After milling at village rice mills, selling to Karawang and Jakarta markets by large scale farmers who are buying paddy from other farmers.	a. After milling at village rice mills, selling to Nganjuk market, Kebupaten Kediri market, or Sub-DOLOG by some large scale farmers.	a. After milling at village rice mills, selling small quantity to the market in and out of Kecamatan	a. After milling at village rice mill, selling to the same rice millers.
3 Marketable Quantity (10^3 t of rice)				
(1) Production	29 (100%)	13 (100%)	22 (100%)	22 (100%)
(2) Kec. Food Consumption	7 (24%)	5 (38.5%)	3 (14%)	5 (23%)
(3) Capacity of Kecamatan Rice Mills /_1	11	10	14	11
(4) Marketable Quantity				
- By Rice (1-3)/_2	18 (62%)	3 (23%)	8 (36%)	13 (54%)
- By Paddy (3-2)	4 (14%)	5 (38.5%)	11 (50%)	6 (25%)

Note : /_1 ; Exculding large scale rice millers who collect paddy out of the Kecamatan.
/_2 ; Estimation of paddy distribution from the Kecamatan.

Table VI 4-2 RICE DEMAND AND SUPPLY IN SURVEY AREA (1988)

Kabupaten/ Kecamatan	Population 1988 (10^3)	Rice Demand (10^3ton)	Production of Paddy (10^3ton)	Feed, Seed & Waste (10^3ton)	Paddy for Milling (10^3ton)	Milled Rice (60%) (10^3ton)	Rice Waste (2.5%) (10^3ton)	Rice Supply (10^3ton)	Rice Surplus Quantity (10^3ton)	Rice Surplus Percent to Supply (%)
Karawang	1380.0	191	972.8	80	893	536	13	523	332	63
Telagasari	49.6	7	52.6	4	49	29	1	28	21	75
Nganjuk	953.0	87	284.6	23	262	157	4	153	66	43
Bagor	50.6	5	21.6	1	22	13	0	13	8	62
Pinrang	293.0	41	307.7	26	282	169	4	165	124	75
Mattiro Bulu	23.2	3	39.4	3	36	22	1	21	18	86
Central Lampung	1788.0	224	534.6	45	490	294	7	287	63	22
Trimurjo	42.7	5	43.0	3	40	24	1	23	18	78

Note : Per capita rice consumption (kg) ; Karawang(138.3), Telagasari(145.2), Nganjuk(91.5), Bagor(89.1), Pinrang(138.8), Mattiro Bulu(142.6), Central Lampung(125.2), and Trimurjo(125.1).

Feed, seed and waste ; Feed(2%), Seed(40.7kg/ha), Waste(5.4%).

Source : Statistics collected in Kabupaten, Kecamatan and Rural Extension Centers.
Living Expenditure Survey,Central Bureau of Statistics.

Table VI 4-3 CAPACITY BALANCE OF RICE MILL IN SURVEY AREA (1988)

(Unit : 10^3 t)

District/ Kecamatan Kecamatan	Rice for Milling (I)	Regional Milling Capacity (II)	Balance of Milling Capacity Rice (II)-(I)	Balance of Milling Capacity Paddy
Karawang	536	733	197	328
Telagasari	29	11	-18	-30
Nganjuk	157	238	81	135
Bagor	13	10	-3	-5
Pinrang	169	211	42	70
Mattiro Bulu	22	14	-8	-14
Central Lampung	294	627	333	555
Trimurjo	24	26	2	3
	/_1	(11)	(-13)	(-22)

Note : /_1 : Excluding 2 private large scale rice mills.

Source : Kabupaten ; Paddy and rice milling capacity by Province and Kabupaten, DGFCA 1988.
Kecamatan ; Estimation based on data from Kabupaten Agricultural Offices and Rural Extension Centers.

Table VI 4-4 PROCESSING AND STORAGE FACILITIES IN SURVEY AREA (1/3)

Item	Kab. Karawang Kec. Telagasari		Kab. Nganjuk Kec. Bagor		Kab. Pinrang Kec. Mattiro Bulu		Kab. Lampung Kec. Trimurjo	
1.Rice Milling Facility	Private	KUD	Private	KUD	Private	KUD	Private	KUD
(1) Large Scale Plant								
-Facility (unit)	2	(-)	1	(-)	(-)	2	2(3)	2(4)
-Capacity (t/hr.)	0.7 ton x 2	(-)	2.0 ton x 2	(-)	(-)	2.2 ton	2.0 ton x 2 1.7 ton x 1	0.8 ton x 3 1.0 ton x 1
-Operation Hours (hrs./year)	1,400	(-)	1,000	(-)	(-)	1,400	1,650-3,000	1,400
-Production (ton)	2,000	(-)	2,000	(-)	(-)	6,300	14,800	4,700
-Outline of Facility and Operation	a. Combination of paddy separator and rice whitener. b. Due to superannuated facilities, milling efficiency is low (around 55%) and operation efficiency is low. c. Mainly custom milling of KUD.		a. Combination of 1 paddy cleaner, 1 husker, 1 paddy separator and 2 rice whiteners. b. Facility owns trucks. c. Farmers bring their paddy to miller. 50% of products are shipped to KUD and other 50% to Market through middleman. d. Facilities manufactured by SATAKE (AGRINDO) in 1982 are popular.		a. Combination of 1 paddy cleaner, 1 husker, 1 paddy separator and 2 rice whiteners. b. Facilities manufactured by SATAKE (AGRINDO). c. 50% of paddy is collected through middlemen for marketing and 50% is brought by farmers.for custom milling.		Private a. Combination of 1 paddy cleaner, 1 husker, 1 paddy separator and 2 rice whitener. b. Facilities are installed in 1970's, and maintenance is good. c. Truck scale is equipped. d. Collection of paddy from Kab. Lampung (75%) and from outside of Kabpaten (25%). KUD a. One is made in Japan, introduced in 1984, started operation in 1989. b. Another 3 are made in Taiwan, introduced in 1989. c. Mainly custom milling.	

Table VI 4-4 PROCESSING AND STORAGE FACILITIES IN SURVEY AREA (2/3)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(2) Private Small Scale Milling Plant in the Village				
-No. of Plants	50	15	79	66
-Average Capacity	0.3 ton/hr.	0.5 ton/hr.	0.2 ton/hr.	0.2 ton/hr.
-Operation Hours (hrs./year)	600	1,000	480	480
-Production	9,000	7,500	7,600	6,300
-Outline of Facility and Operation	a. Facilities are super-annuated. Products include over 35% of broken rice, and this is more than the Dolog standard (35%). b. Mainly custom milling for home consumption of farmers in the villages. c. Partly commercial milling for market.	a. Facilities are super-annuated. It is hard to mill paddy with less than 35% of broken rice (DOLOG standard). b. Mainly custom milling for home consumption of farmers in the villages. c. Partly custom milling for market.	a. Facilities are super-annuated. It is hard to mill paddy with less than 35% of broken rice (DOLOG standard). b. Mainly custom milling for home consumption of farmers in the villages. c. Partly custom milling for market.	a. Facilities are super-annuated. Products include over 35% of broken rice, and this is more than the Dolog standard (35%). b. Mainly custom milling for home consumption of farmers in the villages. c. Facilities owned by plural farmers (around 3 farmers).
-Custom Milling Charge -Production	Rp 20/kg of rice (Rp 10/kg over 1 ton)	Rp 20/kg of rice	1/10 of milled rice	1/10 of milled rice (1/15 over 1 ton)
2.Drying Facilities				
(1) Drying Floor				
-Total Area (m^2)	37,600 m^2	600 m^2	28,600 m^2	117,600 m^2
-Paddy Production (ton)	52,600 ton	23,900 ton	39,400 ton	43,000 ton
-Area per 1 ton of Paddy (m^2)	0.7 m^2/ton	0.03 m^2/ton	0.7 m^2/ton	2.6 m^2/ton
-Drying Floor Owned by Farmers	a. Drying floor (5m x 5m) is constructed in house yard of individual farmers. b. Farmers' houses are closely located in the village, and space is not so much. Only some of farmers own concreted drying floors.	a. 10% of farmers own their drying floors, and other 90% own no floor due to no space by high density of houses in the village.	a. Only large scale farmers own drying floors.	a. Drying floor (5m x 5m) is constructed in house yards of individual farmers. b. Farmers' houses have much space in the village, and almost half of farmers own their drying floors.

Table VI 4-4 PROCESSING AND STORAGE FACILITIES IN SURVEY AREA (3/3)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(2) Dryer				
-No. of Dryers	3 (KUD)	1 (KUD)	1 (KUD)	3 (KUD:1, private:2)
-Holding Capacity	15 ton	7 ton	8 ton	9 ton
-Outline of Facilities and Operation	a. Dryers owned by KUD are stationary type, and operated by private mill operators.	a. Stationery type. This dryer is not operated due to high operation cost.	a. Formerly it was operated. Presently it is not operated due to noise claim from surrounding farmers.	a. Dryer owned by KUD is stationery type, and is not operated. b. Dryer owned by privates are continuous flow type with heater by burning woods.
3.Storage Facilities				
-Total Capacity (t)	5,600	13,500	13,000	19,700
Breakdown (%) KUD	6	2	39	7
Sub-DOLOG	-	34	5	-
Private	6	56	53	51
Farmers/Village	88	8	3	42
-Capacity per Farm Household (ton)	0.5	0.1	0.1	1.2
-Capacity to Total Paddy Production	11%	56%	33%	46%
-Outline of Facilities and Operation	a. KUD storage is used for fertilizers and ago-chemicals, and not for paddy and rice. b. Farmers/village own wooden storages, which paddy can not be stored for long period. c. Only large scale owner farmers own storages of paddy for sale. Most of these are not utilized.	a. In KUD facilities farm inputs in addition to rice are stored. b. 20% of farmers own old wooden type storages which capacity is 20 ton, and storage period is maximum 6 month.	a. Farm inputs in addition to paddy and rice are stored in KUD facilities. b. Not many farmers own storage.	a. KUD storage is used for fertilizers and ago-chemicals, and not for paddy and rice. b. Farmers/village own old wooden type storages, which paddy can not be stored for long period. c. Farmers store paddy for sale.

Table VI 4-5 DRYING AND STORAGE FACILITIES IN SURVEY AREA

Kabupaten / Pilot Area (Kecamatan)	Drying Facility				Warehouse								Total Capacity (t)
	Drying Floor		Dryer		KUD		Sub - DOLOG		Private/Others		Farmers/Villages		
	Unit	Capacity (m2)	Unit	Capacity (t)	Unit	Capacity (t)	Unit	Capacity (t)	Unit	Capacity (t)	Unit	Capacity	
Karawang	690,200		25	155	123	7,400	10	87,000	138	50,700	28,100	109,100	254,200
Telagasari	37,600		3	15	8	340	-	-	4	360	1,600	4,900	5,600
Nganjuk	7,700		4	30	10	1,300	5	87,000	25	63,600	9,100	27,400	179,300
Bagor	1,000		1	7	2	300	4	4,500	3	7,600	800	1,100	13,500
Pinrang	296,100		4	30	24	7,200	20	34,500	30	50,000	1,200	1,700	93,400
Mattiro Bulu	28,600		1	8	11	5,000	2	700	3	6,900	300	400	13,000
Central Lampung	606,700		9	81	24	6,100	11	13,500	1,340	69,300	91,100	112,900	201,800
Trimurjo	111,700		3	63	4	1,400	-	-	4	10,000	6,700	8,300	19,700

Source : Kabupaten Agricultural Offices. Kabupaten Cooperative Offices. KUD, DOLOG

Table VI 4-6 CAPACITY OF RICE MILL BY SCALE IN SURVEY AREA

Kabupaten/ Kecamatan	PPB			PPK/RMU			PPE			Total	
	Number	Capacity (t/hr)	Capacity (t/year)	Number	Capacity (t/hr)	Capacity (t/year)	Number	Capacity (t/hr)	Capacity (t/year)	Number	Capacity (t/year)
Karawang	67	0.7	65,700	1,447	0.3	607,700	142	0.3	59,600	1,656	733,000
Telagasari	2	0.7	1,960	50	0.3	9,000	-	-	-	52	10,960
Nganjuk	11	2.0	31,100	237	0.6	207,300	-	-	-	248	238,400
Bagor	1	2.0	2,000	15	0.5	7,500	-	-	-	16	9,500
Pinrang	5	1.7	12,000	461	0.3	185,200	91	0.1	14,000	557	211,200
Mattiro Bulu	2	2.2	6,300	-	-	-	79	0.1	7,600	81	13,900
Central Lampung	19	1.1	29,600	1,306	0.3	548,500	135	0.3	48,600	1,460	626,700
Trimurjo	7	2.0	19,500	66	0.2	6,300	-	-	-	73	25,800

Note : PPB : Large Scale (more than 0.7 t/hour)
PPK : Small scale (0.3 - 0.7 t/hour)
RMU : Rice Milling Unit (0.3 - 0.7 t/hour)
PPE : Engelberg huller (less than 0.3 t/hour)
Annual operation hours are basically 1.400 hours, while each Kecamatan data are adjusted on the basis of the field survey results.

Source : Rice mill statistics in Indonesia, DGFCA. Kabupaten, Agricultural offices

Table VI 4-7 MONTHLY AVERAGE PRICE AND PRICE INDEX BY RELATED KABUPATEN
(1988 CONSTANT PRICE, ANNUAL AVERAGE =100)

Item	Month (1983 -1988 Average)												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
FARMGATE PRICE OF PADDY													
Karawang													
Average Price(Rp/kg)	284	253	219	208	211	217	231	252	256	274	277	295	248
Index (Average=100)	114	102	88	84	85	88	93	102	103	110	112	119	100
Nganjuk													
Average Price(Rp/kg)	238	230	212	209	214	219	223	232	247	258	261	270	234
Index (Average=100)	102	98	91	89	91	93	95	99	106	110	111	115	100
Pinrang													
Average Price(Rp/kg)	210	205	193	185	180	181	179	180	191	197	197	199	191
Index (Average=100)	110	107	101	97	94	95	93	94	100	103	103	104	100
Central Lampung													
Average Price(Rp/kg)	246	251	210	186	166	179	204	218	225	253	263	273	223
Index (Average=100)	110	113	94	84	75	81	91	98	101	114	118	122	100
WHOLESALE PRICE OF RICE													
Karawang													
Average Price(Rp/kg)	448	445	411	389	387	388	388	410	426	448	472	495	426
Index (Average=100)	105	104	96	91	91	91	91	96	100	105	110	116	100
Nganjuk													
Average Price(Rp/kg)	395	395	378	371	367	369	375	383	406	419	429	429	393
Index (Average=100)	100	100	96	94	93	93	95	97	103	106	109	109	100
Pinrang													
Average Price(Rp/kg)	406	400	382	361	353	358	360	370	369	389	399	419	381
Index (Average=100)	106	105	100	94	92	94	94	97	96	102	104	110	100
Central Lampung													
Average Price(Rp/kg)	415	417	379	345	348	363	367	392	411	432	439	447	396
Index (Average=100)	104	105	95	87	87	91	92	98	103	109	110	112	100

Note : Average prices through 1983 to 1988 were calculated at 1988 constant price using price inflators.

Table VI 4-8 PADDY QUALITY AND PRICE BY RELATED KABUPATEN

	1988												Average
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
I. Kab. Karawang													
1. Farm Gate Price	300.0	278.2	198.5	184.6	200.0	218.3	255.0	235.0	234.0	301.7	302.0	300.0	250.6
2. Quality of Paddy													
(a) Moisture Contents	16.3	22.0	24.4	23.5	23.1	17.3	20.6	24.6	23.8	17.7	17.5	17.9	20.7
(b) Impurities	14.9	15.4	16.0	16.4	16.4	15.2	15.7	17.6	16.0	14.5	14.4	15.5	15.7
3. Quality Grade	GKS	GKP	GKP	GKP	GKP	GKS	GKP	GKP	GKP	GKS	GKS	GKS	GKP
II. Kab Nganjuk													
1. Farm Gate Price	273.9	272.8	190.3	191.1	225.6	267.2	196.7	207.2	280.0	288.6	302.5	281.7	248.1
2. Quality of Paddy													
(a) Moisture Contents	16.0	18.5	24.5	21.5	14.7	17.0	24.5	21.1	14.7	15.6	15.0	16.5	18.3
(b) Impurities	15.8	16.4	19.9	22.5	19.2	17.1	18.4	18.6	18.4	14.3	12.7	15.8	17.4
3. Quality Grade	GKS	GKP	GKP	GKP	GKP	GKS	GKP	GKP	GKS	GKS	GKS	GKS	GKP
III. Kab. Pinrang													
1. Farm Gate Price	199.1	193.7	171.9	175.0	180.0	171.2	169.1	170.1	180.8	186.4	186.4	188.2	181.0
2. Quality of Paddy													
(a) Moisture Contents	15.8	18.7	23.1	21.7	21.7	17.6	20.4	20.5	19.7	16.2	16.1	16.7	19.0
(b) Impurities	15.4	15.8	21.5	20.2	18.9	16.9	16.5	17.5	17.1	15.2	14.8	16.3	17.2
3. Quality Grade	GKS	GKP	GKP	GKP	GKP	GKS	GKP	GKP	GKP	GKS	GKS	GKS	GKP
IV. Kab. Central Lampung													
1. Farm Gate Price	280.5	293.7	185.9	172.4	166.0	189.4	250.9	252.3	235.0	264.4	276.0	273.6	236.7
2. Quality of Paddy													
(a) Moisture Contents	15.3	15.6	17.7	19.2	21.8	18.5	16.2	15.7	20.7	15.2	15.7	15.9	17.3
(b) Impurities	15.6	15.7	15.5	16.8	18.0	18.5	15.4	16.2	16.8	16.7	17.2	17.7	16.7
3. Quality Grade	GKS	GKS	GKS	GKP	GKP	GKP	GKS	GKS	GKP	GKS	GKS	GKS	GKS

Note : 1. Figures are average of sampling data by month.

2. Quality grade

Item	GKP	GKS	GKG
Moisture Contents (Max %)	25	18	14
Other foreign Contents (Max %)	35	22	14

3. - = Not available

Source : Central Bureau of Statistics, Jakarta.

Table VI 4-9 QUALITY AND PRICES OF RICE AND PADDY IN SURVEY AREA (1/3)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
1.Quality of Paddy for Sales				
(1) Water Content				
-Wet Season Harvesting	22-24	21-25	22-23	18-22
-Dry Season Harvesting	21-25	21-25	-	16-21
-Off Season	16-18	15-18	-	15-16
(2) Impurities (%)				
-Wet Season Harvesting	15-16	20-23	20-22	16-18
-Dry Season Harvesting	16	18-19	-	16-17
(3) Quality of Paddy				
-Wet Season Harvesting	Mostly GKP	Mostly GKP	GKP	Mostly GKP (partly GKS)
-Dry Season Harvesting	Mostly GKP	Mostly GKP	-	GKP/GKS
-Off Season	GKS	GKS	-	GKS
2.Quality of Paddy of Middleman and Pricing System				
-Quality	a. Drying is important for pricing. b. No measuring on water content by moisture meter in field and farmgate. c. Reduce 5 Rp/kg for much impurities judged by watching.	a. Degree of drying rather than content of impurities affects price. b. Water content is judged from touching paddy, drying and harvesting date. c. Farmers suspend to sell paddy if germed paddy grains are found.	a. Degree of drying rather than content of impurities affects price. b. Water content is judged from touching paddy, drying and harvesting date.	a. Drying is important for pricing. b. No measuring on water content by moisture meter in field and farmgate. c. No case of reduce price by including impurities.
-Price	a. Farmgate price is affected by drying condition of paddy, milling capacity and financial capacity of middleman and paddy price in market. b. Middleman decides paddy price according to the market price.	a. Paddy prices varies depend on location.	a. Only mill operators decide paddy price. Because the Kabupaten is surplus in paddy production, price is low.	a. Farmgate price is affected by drying condition of paddy, milling capacity and financial capacity of middleman and paddy price in market. b. Middleman decides paddy price according to the market price.

Table VI 4-9 QUALITY AND PRICES OF RICE AND PADDY IN SURVEY AREA (2/3)

Item		Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
3.Quality of Milled Rice					
(1) Milling Rate	-For Market	55-64	±60	±63	±60
	-For DOLOG	52-60	±50	±50	±55
(2) Variety	-Rainy Season	Mixed milling of Cisadane and IR64.	Single milling of IR36.	Single milling of IR42, and partly mixed milling of IR36 and IR42.	Mixed milling of IR64, IR42 and Cisadane.
	-Dry Season	Single milling of IR64.	30% is mixed milling of IR64 and IR36.	Single milling of IR64.	Single milling of IR64.
(3) General		a. It is difficult to produce grade B for DOLOG in small scale village millers. b. Milling rates of 2 large scale milling facilities in the Kecamatan is low to produce grade B rice.	a. It is difficult to produce grade B for DOLOG in small scale village millers.	a. It is difficult to produce grade B for DOLOG in small scale village millers.	a. It is difficult to produce grade B for DOLOG in small scale village millers. b. 2 large scale milling facilities in the Kecamatan produce grade B rice efficiently.
4.Price					
(1) Farmgate Price (1988, Rp/kg)					
-Wet Season Harvesting		191-209 (average:200)	185-189 (average:187)	172-175 (average:174)	160-170 (average:176)
-Dry Season Harvesting		245-258 (average:251)	221-241 (average:231)	191-196 (average:194)	237-252 (average:244)
-Off Season		253-310 (average:282)	260-304 (average:282)	198-213 (average:206)	266-292 (average:279)
-Market Trend		Price in wet season harvesting is lowest. Price is stagnant during dry season harvesting, and increase afterwards. Highest price is marked in December to January. Price is decreasing from February to wet season harvesting	Price in wet season harvesting is lowest. Price is stagnant during dry season harvesting, and increase afterwards. Highest price is marked in December to January. Price is decreasing from February to wet season harvesting	Price in wet season harvesting is lowest. Price is stagnant during dry season harvesting, and increase afterwards. Highest price is marked in December to January. Price is decreasing from February to wet season harvesting	Price in wet season harvesting is lowest. Price is stagnant during dry season harvesting, and increase afterwards. Highest price is marked in December to January. Price is decreasing from February to wet season harvesting

Table VI 4-9 QUALITY AND PRICES OF RICE AND PADDY IN SURVEY AREA (3/3)

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor	Kab. Pinrang Kec. Mattiro Bulu	Kab. Lampung Kec. Trimurjo
(2) Retail Price	1988, (Rp/kg)	1988, (Rp/kg)	1988, (Rp/kg)	1988, (Rp/kg)
-Lowest Price	358	357	328	373
-Highest	520 (December)	460 (December)	404 (December)	560 (December)
-Market Trend	Price in wet season harvesting is lowest. Afterwards, price is increasing, and highest price is marked in December.Price is decreasing until wet season harvesting. (Generally trends is same as for paddy price.)	Price in wet season harvesting is lowest. Afterwards, price is increasing, and highest price is marked in December.Price is decreasing until wet season harvesting. (Generally trends is same as for paddy price.)	Price in wet season harvesting is lowest. Afterwards, price is increasing, and highest price is marked in December.Price is decreasing until wet season harvesting. (Generally trends is same as for paddy price.)	Price in wet season harvesting is lowest. Afterwards, price is increasing, and highest price is marked in December.Price is decreasing until wet season harvesting. (Generally trends is same as for paddy price.)

Table VI 5-1 KUD MEMBERSHIP IN SURVEY AREA, 1989

Kabupaten/Kecamatan Name of KUD	Number of Desa	Number of Farmer Member	Number of Total Farmer	Percent of Covering Farmer (%)	Number of Non-farmer Member	Total Member	Percent of Farmer Member (%)
Karawang/Telagasari							
Warga Bhakti	6	640	2,468	26	441	1,081	59
Margaluyu	3	524	1,457	36	0	524	100
Saluyu	5	690	1,999	35	26	716	96
Total	14	1,854	5,924	31	467	2,321	80
Nganjuk/Bagor							
Sidomulya	21	3,750	11,592	32	1,500	5,250	71
Pinrang/Mattiro Bulu							
Allita	1	300	1,240	24	198	498	60
Serikayat	1	586	1,376	43	52	638	92
Padakkalawa	1	308	1,069	29	10	318	97
Marannu	1	453	453	100	196	649	70
Total	3	1,647	4,138	40	456	2,103	78
Lampung/Trimurjo							
Triwidodo	8	2,005	4,054	49	400	2,405	83
Simbar Waringin	6	763	2,741	28	94	857	89
Total	14	2,768	6,795	41	494	3,262	85

Table VI 5-2 KUD FACILITIES IN SURVEY AREA, 1989

Kabupaten/Kecamatan Name of KUD	Rice Mill		Warehouse		Drying Facility			Truck	
	No of Unit	Total Capacity (t/hour)	No of Unit	Total Capacity (t)	Drying Floor (m2)	Dryer No of Unit	Dryer Capacity (t)	No	Total Capacity (t/load)
Karawang/Telagasari									
Warga Bhakti	-	-	4	120	-	1	10	-	-
Margaluyu	-	-	-	-	-	-	-	-	
Saluyu	-	-	4	220	600	2	7	1	5
Total	-	-	8	340	600	3	17	1	5
Nganjuk/Bagor									
Sidamulya	1	2	2	300	600	-	-	1	3
Total	1	2	2	300	600	-	-	1	3
Pinrang/Mattiro Bulu									
Allita	1	1	3	2,000	1,500	-	-	-	-
Seikayat	1	1	3	1,200	1,200	-	-	-	-
Padakkalawa	-	-	3	1,200	1,500	-	-	-	-
Marannu	-	-	2	600	1,200	1	4	-	-
Total	2	2	11	5,000	5,400	1	4	-	-
Lampung/Trimurjo									
Triwidodo	3	2.4	3	400	1,500	-	-	2	10
Simbar Waringin	1	1.0	1	1,000	600	1	3	1	5
Total	4	3.4	4	1,400	2,100	1	3	3	15

Table VI 5-3 KUD ACTIVITIES IN SURVEY AREA, 1987/88

Kabupaten/Kecamatan Name of KUD	Paddy Procurement		Rice Procurement		Rice Distribution				Finance (Rp'000)		
					DOLOG		Market		Saving	Credit	Profit
	Quantity Unit (t/year)	Average Price (Rp/kg)	Quantity Unit (t/year)	Average Price (Rp/kg)	Q'ty (t)	Price (Rp/kg)	Q'ty (t)	Price (Rp/kg)		(KUT)	
Karawang/Telagasari											
Warga Bhakti	-	-	1,500	365	1,500	370	-	-	32,118	115,064	19,462
Margaluyu	-	-	-	-	-	-	-	-	871	-	-
Saluyu	-	-	2,628	365	2,628	370	-	-	609	87,848	21,915
Total	-	-	4,128	365	4,128	370	-	-	33,598	202,912	41,377
Nganjuk/Bagor											
Sidamulya	300	250	1,520	370	1,700	375	-	-	3,785	149,689	10,000
Total	300	250	1,520	370	1,700	375	-	-	3,785	149,689	10,000
Pinrang/Mattiro Bulu											
Serikayat	-	-	1,112	370	1,112	375	-	-	1,053	17,053	3,900
Padakkalawa	-	-	3,358	370	3,358	375	-	-	5,993	51,524	14,643
Marannu	-	-	1,350	370	1,350	375	-	-	650	15,205	3,800
Total	-	-	5,820	370	5,820	375	-	-	7,696	83,782	22,343
Lampung/Trimurjo											
Triwidodo	-	-	420	365	250	370	170	380	41,488	609,908	17,992
Simbar Waringin	-	-	50	355	-	-	50	365	3,208	132,000	7,867
Total	-	-	470	364	250	370	220	377	44,696	741,908	25,859

Table VI 5-4 COMPOSITION OF FARMER GROUPS SELECTED IN SURVEY AREA

Kecamatan/Desa Farmer Group	Key Farmer	Progressive Farmer	Follower	Total Member
1. Telagasari/Cadas Kertajaya				
1) Karya Tani	1	10	27	38
2) Banyu Asih	1	10	48	59
3) Sri Mulya	1	10	25	36
4) Marga Mulya	1	10	28	39
Total Member	4	40	128	172
Share of Tenant (%)	0	0	39	29
2. Bagor/Selorejo				
1) Boga Semabada	1	10	127	138
2) Ringin Tunggal	1	10	214	225
Total	2	20	341	363
Share of Tenant (%)	0	0	84	79
3. Mattiro Bulu/Marannu				
1) Reso Pammase I	1	10	47	58
2) Reso Pammase II	1	15	-	16
3) Reso Pammase III	1	12	-	13
Total	3	37	47	87
Share of Tenant (%)	0	44	100	72
4. Trimurjo/Purwodadi				
1) Krida Kismana	1	10	83	94
2) Panti Bogo	1	7	99	107
3) Yoso Makmur	1	5	47	53
Total	3	22	229	254
Share of Tenant (%)	0	0	0	0

Source : BPP Annual Reports, WKPP Annual Report,
Interview survey by JICA Study Team

Table VI 5-5 FARMER GROUP ACTIVITIES IN SURVEY

Item	Kab. Karawang Kec. Telagasari	Kab. Nganjuk Kec. Bagor
1. Evaluation of SUPRA INSUS Farmer Groups		
- Beginner	0	6
- Advance	55	26
- Senior	44	11
- Excellent	3	1
Total	102	44
2. Group Activities		
(1) Farming	a. Maintenance/repair work of tertiary canals is done only by active groups. b. Convenience for land preparation by hand tractor is provided. c. Transplanting and harvesting is done by agricultural laborers' groups in the same Desa by contract. d. There are no cases of joint ownership or utilization of farm machinery. (Machinery is owned by private and leased)	a. Maintenance/repair work of tertiary canals is done only by active groups. b. Water managed is scheduled by HIPPA, which consists of each group's representatives. c. Farm road, which facilities carrying from field to farmgate has been constructed by Gotong Royong. d. Some groups have joint ownership and utilization of hand tractors. e. Some groups grow seedling jointly.
(2) Processing/Marketing	a. There are no cases of group activity.	a. There is a group that has a 25 ton warehouse, constructed by Gotong Royong, to stove paddy for their own consumption. b. There are no cases of group activity for drying milling and marketing.
(3) General	a. Member usually have little interest on improvement of field work, because most of farming activities are done by laborers not by themselves. b. Members have little interest on joint utilization of rice mill and joint marketing.	a. Members are organized fairly sysmatically b. The stress is put on water management, management of manpower and reaction to PPL's extension work. c. Relationship among groups has been developed centering on on-farm water management, and is now developed mainly on manpower management.
3. Meeting	a. Number of attendance and frequency is small. b. Contents of POSKO is limited to information exchange c. Meeting is usually held in the evening.	a. Farmers' interests on SUPRA INSUS technologies are high. b. Extension meeting is held at field site in daytime.

Item	Kab. Pinrang Kec. Mattiro Bulu	Kab. Central Lampung Kec. Trimurjo
1. Evaluation of SUPRA INSUS Farmer Groups		
- Beginner	39	0
- Advance	75	4
- Senior	7	36
- Excellent	1	13
Total	122	53
2. Group Activities (1) Farming	a. Maintenance/repair work of tertiary canals is done only by active groups. b. Rats control is done jointly. c. Procurement of manpower from other Kecamatans is arranged based on the estimation of manpower shortage for harvest.	a. Maintenance/repair work of tertiary canals is done only by active groups. b. Labor exchange is done inside group and among groups (in from of owner contract). c. Transplanting is done by transplantor groups (10 Females & 2 males) organized in group. d. There are no cases of joint ownership or utilization of farm machinery.
(2) Processing/Marketing	a. There are no cases of groups activity	a. There is a rice mill financed by 3 groups leaders. (Operating system is the same as other private one.) b. Some groups have systems that each member provides certain amount of paddy to be rented to others, making use of warehouse jointly. (Paddy is reimbursed, interest of half year is 25%) c. There are cases of joint sale of paddy to KUD in adjacent Kecamatan.
(3) General	a. Members are interested in mechanization, and wondering its economic. b. The technical and economic difference among groups is remarkable.	a. Members have much interest on improvement of field work. b. Members know the necessity on joint ownership and utilization of farm machinery. c. Members have much interest on joint utilization of rice mill and joint marketing.
3. Meeting	a. Farmers' interests on SUPRA INSUS technologies are high. b. Extension meeting is held at field site in daytime.	a. Farmers' interests on SUPRA INSUS technologies are high. b. Extension meeting is held at field site in daytime.

Table VI 5-6 CRITERIA AND SCORING VALUE FOR FARMER GROUP EVALUATION

Criteria/Contents	Maximum Scoring Value
I. Spreading Information	
1.1 Key farmer's activity for getting information	10
1.2 Information diffusion methods by key farmer	20
1.3 Members' understandings on information	10
	50
II. Planning Process	
2.1 Working plan with/without writing	50
2.2 Planning procedure	50
2.3 Members' participating degrees to the plan	75
2.4 Key farmers' capability of execution of the plan	25
	200
III. Cooperative Activity	
3.1 Recording of the plan activity	50
3.2 Members' duties for the plan execution	20
3.3 Kinds and degrees of the cooperative activity	110
3.4 Key farmer's action for prevention of members' deviation	20
	200
IV. Capability on Facility Development	
4.1 Utilization degrees of agricultural equipment by group member	50
4.2 Utilization methods of equipment	50
	100
V. Capacity of Capital Formation	
5.1 Ways for group's capital savings	10
5.2 Group's properties	10
5.3 Amount of group's properties ; barn, building, equipment, saving	10
5.4 Members' utilization ratio of the properties	20
	50
VI. Capacity of Execution	
6.1 Ratio of members' participation to the plans	30
6.2 Ratio of members' credit repayment to BRI	40
6.3 Condition of group's activity out of BRI	30
	100
VII. Capacity for Overcoming of Emergency Problems	
7.1 Members' participation to overcome emergency problems	15
7.2 Fund morbilization from members	15
7.3 Procedures for overcoming of emergency problems	20
	50
VIII. Key Farmers' Leadership	
8.1 Selection of farmers' leader for re-organization of farmer group	15
8.2 Kinds of training to members	10
8.3 Members' participation to training	15
8.4 Chance to be selected as a key farmer	10
	50
IX. Relationship with KUD	
9.1 Members' utilization ratio of KUD services to get farm inputs	20
9.2 Members' utilization ratio of KUD facilities such as rice mill	20
9.3 Degree of key farmer's participation to preparation of KUD working plan	20
9.4 Degree of key farmer's participation ratio to KUD operation activity	20
9.5 Group members' participation ratio to KUD active member	20
	100
X. Level of Farm Productivity	
10.1 Level of members' average yield	100
Total Value	1,000

Table VI 5-7 CLASSIFICATION CRITERIA OF FARMER GROUP

Class/Characteristics	Range of Scoring Value
I. Beginner Group	0 ~ 250
1.1 Key farmer's contact with members is not achieved.	
1.2 New farming technology is limited to nucleous members.	
1.3 Key farmer is active.	
1.4 Group activities is informative.	
II. Advance Group	251 ~ 500
2.1 Nucleous members are contacting other members, while activities are limited.	
2.2 Working plan is prepared.	
2.3 Key farmer is active.	
2.4 Key farmer can manage cooperative activities in the group.	
III. Senior Group	501 ~ 750
3.1 Farmer group is executing their business in the area.	
3.2 Key farmer is advanced.	
3.3 Key farmer and nucleous members have leadership to manage their business.	
3.4 Group training is done according to own programs.	
IV. Excellent group	751 ~ 1000
4.1 Group coordinates with KUD.	
4.2 Annual program is prepared to increase production and income.	
4.3 Group's business programs are well integrated and coordinated with KUD.	
4.4 Group has own capital savings.	

Table VI 6-1 EXTENSION AREA OF PPL FOR FOOD CROPS IN SURVEY AREA

Pilot Area / Name of WKBPP	Telagasari / Telagasari	Bagor / Bagor	Mattiro Bulu / Manarang	Trimurjo / Trimurjo
A. Whole BPP area				
1. No.of Kecamatan covered	2	4	3	1
2. No.of PPL (Food crops)	13	13	16	6
3. Total extension area (ha)	7,800	5,700	16,600	4,000
4. Working area per one PPL (ha)	600	440	1,040	670
5. Location (Kecamatan)	Telagasari	Bagor	Mattiro Bulu	Trimurjo
B. Survey area (related Kecamatan)				
1. No.of PPL in survey area (ha)	6	3	4	6
2. Total extension area (ha)	3,970	2,410	3,950	4,000
3. Working area per one PPL (ha)	660	800	990	670
C. Related PPL in Pilot Plan Area				
1. Name of WKPP	Cilewo	Bagor II	Marannu	Purwodadi
2. Number of Farmer Groups	16	16	32	13
3. Working area (ha)	290	230	1,360	320

Source : BPP monograph, 1988/89

Table VI 6-2 MEETING RECORD IN SUPRA INSUS COORDINATION COMMITTEE AT KABUPATEN LEVEL (1/2)
(Harvesting Season 1988 and1988/1989)

Main Subject	Karawang		Nganjuk		Central Lampung	
	Finding Constraint	Conclusion Instruction	Finding Constraint	Conclusion Instruction	Finding Constraint	Conclusion Instruction
1. Seeds	Lack of seeds to be procured	-	1. Difficult to get various seeds, because procurement was not enough to full fill the total area of S.I. in the region 2. Lack of seed grower within Farmers Groups 3. Lack of IR-64 seeds 4. In 1988-IR-64 was not accepted to be planted, there were BRS disease attack	1. To set-up/point out the Framers' Groups to be a seed grower 2. To flow-in from other region 3. Agriculture Services suggested to provide seeds either ES or SS quality 4. To change IR-64 to other varieties (IR-36; IR-48; Cintanduy or Semeru)	1. Some of seeds were not yet clearly identified (include IR-64 in KUD Donomulyo) 2. Unqualified seeds (bad seeds) found in Kec. Gn. Sugih. 3. Lack of seed supply of amount 494.15 ton in 1988/1989. 4. IR-64 forbidden to be planted in Trimurjo in wet season 1988 /1989 because there were BRS disease	Perum Sang Hyang Seri is in charge of investigating those cases It need to flow in from other branch of Perum Sang Hyang Seri To change with other variety (IR-36; Cisadane, IT-65 or others).
2. Fertilizer and Agro Chemical concerned with RDKK formulation	1. The price changing of Farm inputs made confusion to RDKK formulation at Farmers Groups level. 2. RDK/RDKK formulation was often late to submit to KUD because lack of experiences ar farmers Groups level on it.	1. RDKK should be rearranged by KUD in order with the new price of farm inputs 2. The related institution/persons who involved on that matter must strengthen their activity to solve those matters	1. KCL distribution in some areas was not so perfectly right weight (weight loss t 2-3 kg per bag) 2. Lack of knowledge at F. Groups level to formulate RDK/RDKK	1. Farmers' Groups advised to make a report in order to get compensation from the supplier. 2. PPL/KUD/Farmers Groups adivised to make a good atmosphere.	1. Distribution was late because some reasons: a/ KUD/BRI matters b/ F. groups matters c/ RDK/RDKK matters at Farmers Groups level.	1. PDL/KUD/BRI should make a good working team to help farmers /Farmers' Groups in formulating of RDKK timely and perffectly right
3. KUT performance	1. KUT distribution was often late 2. KUT repayment was not so run well	1. To simplify the KUT mechanism 2. To invent the disobeydient KUD or Farmers Groups and to make a critical remarks to them	1. KUT distribution was often late 2. KUT repayment was not so run well	1. To improve a distribution mechanism 2. Tomake critical remarks (kind address) to the dissobydient KUD or Farmers' Groups	1. To simplify the KUT mechanism 2. KUT repayment was very low (+ 9%) in dry season	1. To simplify the KUT mechanism 2. To conduct mass campaign/mass movement to persuate farmers / KUD to do best
4. Irrigation/ Water Management	1. Lack of water in some areas because late of rain in November 1988	1. To reaarange the land preparation periode and to prepare land preparation equipment properly because it would be lack of labours on that time.	1. Some areas were flooded and damage plants (+ 44 ha in Bungus Village and 15 ha in Tanjung Anom)	1. To do investigation as soon as possible 2. To repair irrigation canal	1. Some of irrigation canal lack of water so make it paddy land dry and influence to farmers did not follow the recommended technology (dry season 1988)	No. instruction
5. Pest/Disease Control	No mentioned	-	1. In dry season 1988 there were found BRS disease in some areas	1. IR-64 forbidden to be planted because it has no diffence to BRS	1. In 1988 there were funge disease attacked paddy plant was about 987.25 ha	1. To instruct farmers in order to cope the diseases by using fungicides.

Table VI 6-2 MEETING RECORD IN SUPRA INSUS COORDINATION COMMITTEE AT KABUPATEN LEVEL (2/2)
(Harvesting Season 1988 and 1988/1989)

Main Subject	Karawang		Nganjuk		Central Lampung	
	Finding Constraint	Conclusion Instruction	Finding Constraint	Conclusion Instruction	Finding Constraint	Conclusion Instruction
6. Labours	1. Lack of labour in harvesting period of the wet season because of some reasons : a/ Transportation cost increase in rural area b/ Labours did not like to go any where (they like to stay at home while waiting for stopping rain etc.	No coming up	-	-	1. Lack of labours in wet season because they don't want to work at paddy field there are very heavy muddy land on that time	1. Farmers' Groups suggested to ask credit /revolving funds of some equipment e.g. tracktors, post harvest equipment and tool etc.
	2. Lack of tracktor for land preparation on the other hand there is too much the rotary tracktor	1. Agriculture Service in cooperation with Inti Mario Jaya Ltd. Co will do tracktor demostration in 6 (six) Sub District by using KUBOTA BOTANI tracktors. This activity purposes is to attract farmers to get this equipment either by cash or by credit	-	-	-	-
7. Post Harvest Matters	1. Post Harvest losses was still high because : a/ Farmers have not fully applied the recommended technology b/ These might be because they lack of knowledge lack of equipment and low awareness on P.H handling.	1. Post Harvest handling campaign will be strengthened in the near future	-	-	1. Post Harvest losses was still high because : a/ Farmers have not fully apply the recommended technology b/ These might be because they lack of knowledge lack of equipment and low awareness on P.H handling.	1. Post Harvest losses was still high because : a/ Farmers have not fully apply the recommended technology b/ These might be because they lack of knowledge lack of equipment and low awareness on P.H handling.
8. KUD matters	1. Lack of management 2. Lack of facilities 3. Lack of capital	The related institution should do more active to improve those conditions	1. Lack of management 2. Lack of facilities 3. Lack of capital	The related institution should do more active to improve those conditions	1. Lack of management 2. Lack of facilities 3. Lack of capital	The related institution should do more active to improve those conditions

Table VI 6-3 AGRICULTURAL CREDIT ON RICE PRODUCTION AND MARKETING (1/2)

No.	Name of Credit	(1) Objectives (2) Target Groups	Financial Source and Channeling	Executive Agency	Fond of Credit (Rp 10^6))	Requirement: Maximum Amount (Rp 10^3)	Requirement: Repayment Periode (maximum)	Requirement: Interest Rate (%/year)	Requirement: Repayment Procedures	Note
1.	CREDIT FOR INCREASING SMALL FARMERS' INCOME (CREDIT P4K)	(1) To support the increase in small farmers' income (2) farmers	Departement of Finance through BRI	BPLPP (Education and Training for Agriculture Extension Agency)	Flexible	Rp. 500	3 years	6%	Based on negotiation	
2.	CREDIT FOR MOISTURE TESTER	(1) To supply equipment for inspection of paddy/rice by KUD (2) KUD	Departement of Finance through BRI	Directorate of Cooperative Economics/ Mini. of Cooperative	Rp. 1.485.8	Rp. 1,292 (for KUD; 4 unit /M.T) Rp. 1,428,306 (for DG of Cooperative)	5 years 9 months	6% free	5 times repayment in 5 years	Credit for 4 moisture testers KUD get credit from DG of Cooperative
3.	CREDIT FOR DEVELOPMENT OF WAREHOUSE, CONCRETE FLOOR AND KIOS	(1) To supply post harvest and marketing facilities to KUD (2) KUD	Departement of Finance through BRI	Directorate of Cooperative Economics/ Mini. of Cooperative	Rp. 47,360 for development of warehouse, concrete floor and KIOS Rp. 106,760 for development of KIOS	-	-	-	-	Target : 1,250 units - Warehouse - Concrete floor Target : 5,723 units -KIOS
4.	SPECIAL CREDIT ON SPRAYER	(1) To extend utilization of hand sprayer and to strengthen a role of KUD (2) KUD and farmers	Departement of Finance through BRI	Ministry of Agriculture & Ministry of Cooperative	Rp. 9,647.790	1. Local H. S Rp. 34/unit 2. Asian H.S Rp. 37/unit 3. European H.S Rp. 47/unit 4. USA H.S Rp. 49/unit 5. Asian Mist Blower Rp. 175/unit 6. European M. Blower Rp. 200/unit	3 years with grace periods of 6 months	For KUD 9% For Farmers 12%	By season (one month after harvesting) 6 times repayment in 3 years	Maximum credit for farmers: Rp. 50,000 per unit Maximum credit for KUD: -Mist Blower ; Rp. 150,000 per unit -H. Sprayer ; Rp. 40,000 per unit

Table VI 6-3 AGRICULTURAL CREDIT ON RICE PRODUCTION AND MARKETING (2/2)

No.	Name of Credit	(1) Objectives (2) Target Groups	Financial Source and Channeling	Executive Agency	Fond of Credit (Rp 10^6))	Requirement: Maximum Amount (Rp 10^3)	Requirement: Repayment Periode (maximum)	Requirement: Interest Rate (%/year)	Requirement: Repayment Procedures	Note
5.	GENERAL CREDIT FOR RURAL AREA (KUPEDES ; KREDIT UMUM PEDESAAN)	(1) To support small scale industries (2) farmers and traders in general sector	Bank of Indonesia (BI)	BRI with related Ministries	Flexible	Rp. 1,000 (in 1985)	2 years for work capital 3 years for investment	12% plus 6% if there are arrears. 18% plus 6% if there are arrears.	By schedule or payment at once within the period	There are incentives in case of repayment on schedule.
6.	SMALL CREDIT INVESTMENT/ PERMANENT WORKING CAPITAL CREDIT (KIK/KMKP)	(1) supply of capital goods and services which are needed for rehabilitation, modernization, project expansion, set-up new project (2) general	BI through several Banks; BRI, BNI, Export-Import Bank, BPD/Development Bank of Indonesia	BRI with related Ministries	Flexible	Rp. 15,000 (in 1984)	3 years for investment 2 years for working capital	12% plus 3% if there are arrears.		Maximum credit amount is changeable.
7.	KREDIT USAHA TANI/KUT (Farm Credit Scheme)	(1) To assist farmers for procurement of farm inputs (2) Farmers/ farmer groups in SUPRA INSUS program	BI through BRI	BIMAS	Flexible	Flexible/ depend on the total areas (definitive package per ha)	7 months	12% or 7% for 7 months	By season after harvesting	Fix prices of farm inputs applied
8.	REVOLVING FUND CREDIT ON HAND TRACTOR AND WATER PUMP TO FRAMER GROUPS	(1) to strength farmer group activities	Departement of Finance through BRI	Dir. Gen. of Food Crops Agriculture/ Mini. of Agriculture	Flexible	1. Hand tractor Rp. 1,771,200/ unit 2. Axle Water Pump Rp. 1,542,888/ unit 3. Centrifugal water pump Rp. 3,150,000/ unit	5 years (Maximum)	-	In kind within several seasons	

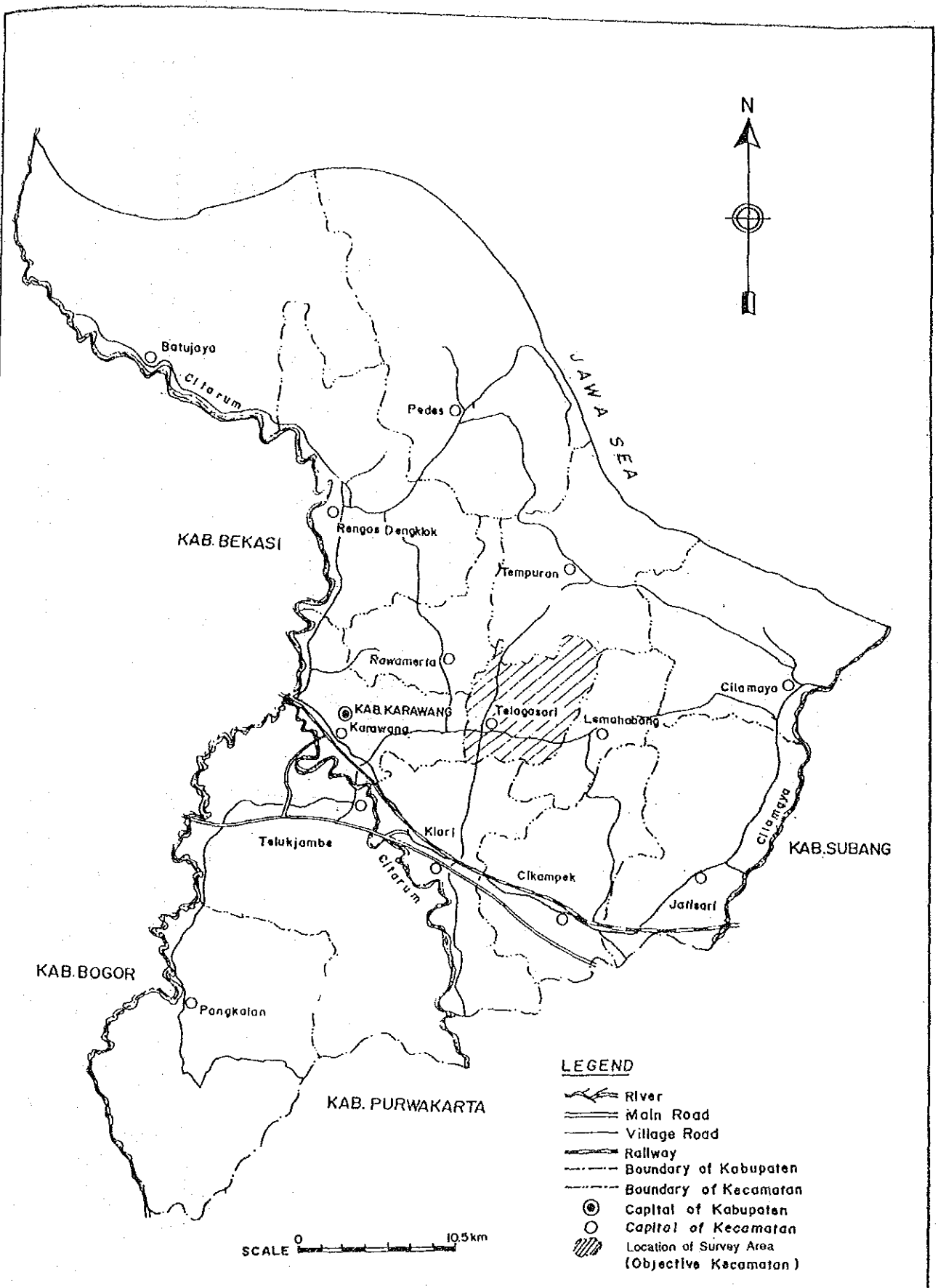

Fig. VI 1 - 1 ADMINISTRATION MAP OF KABUPATEN KARAWANG

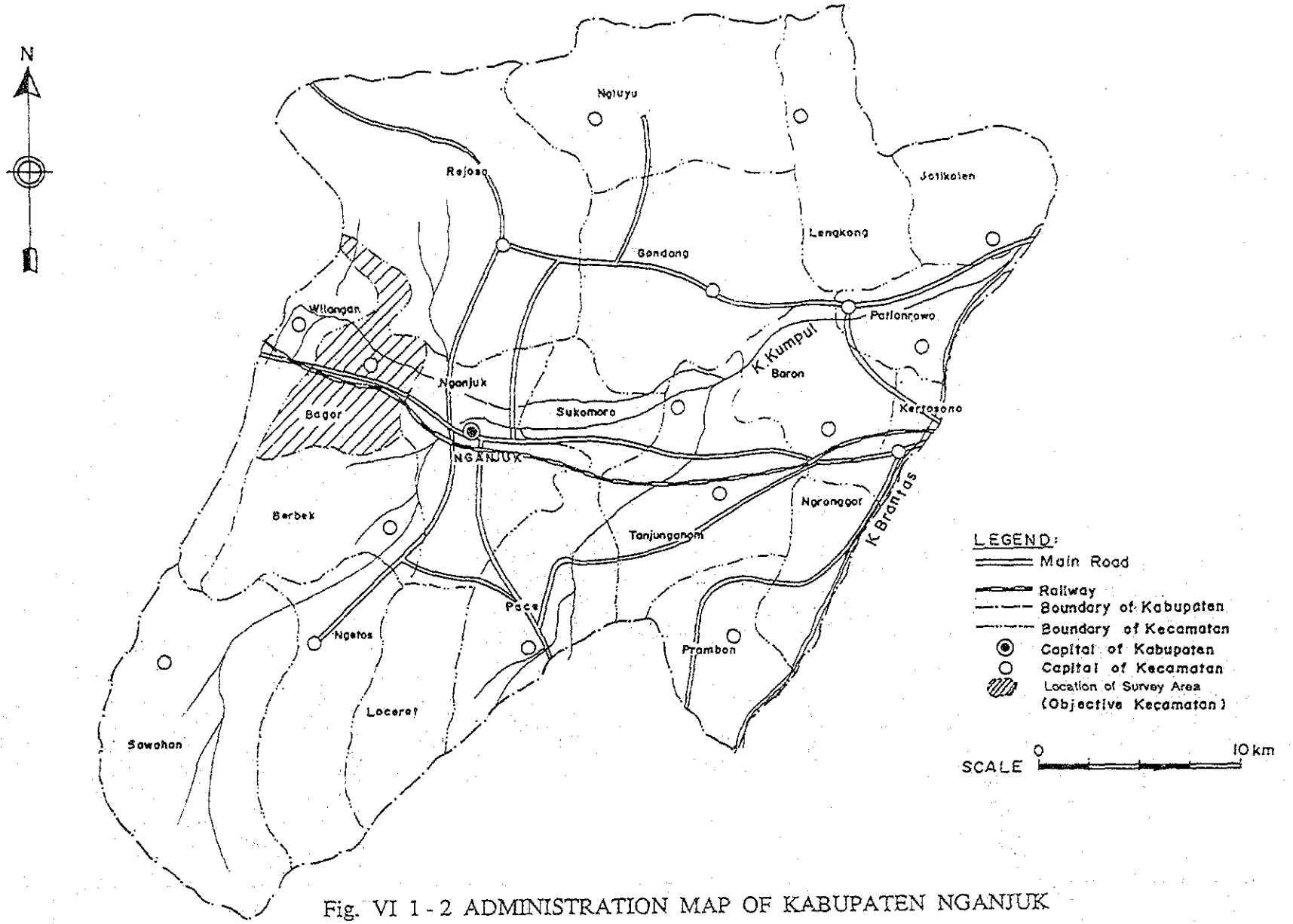

Fig. VI 1 - 2 ADMINISTRATION MAP OF KABUPATEN NGANJUK

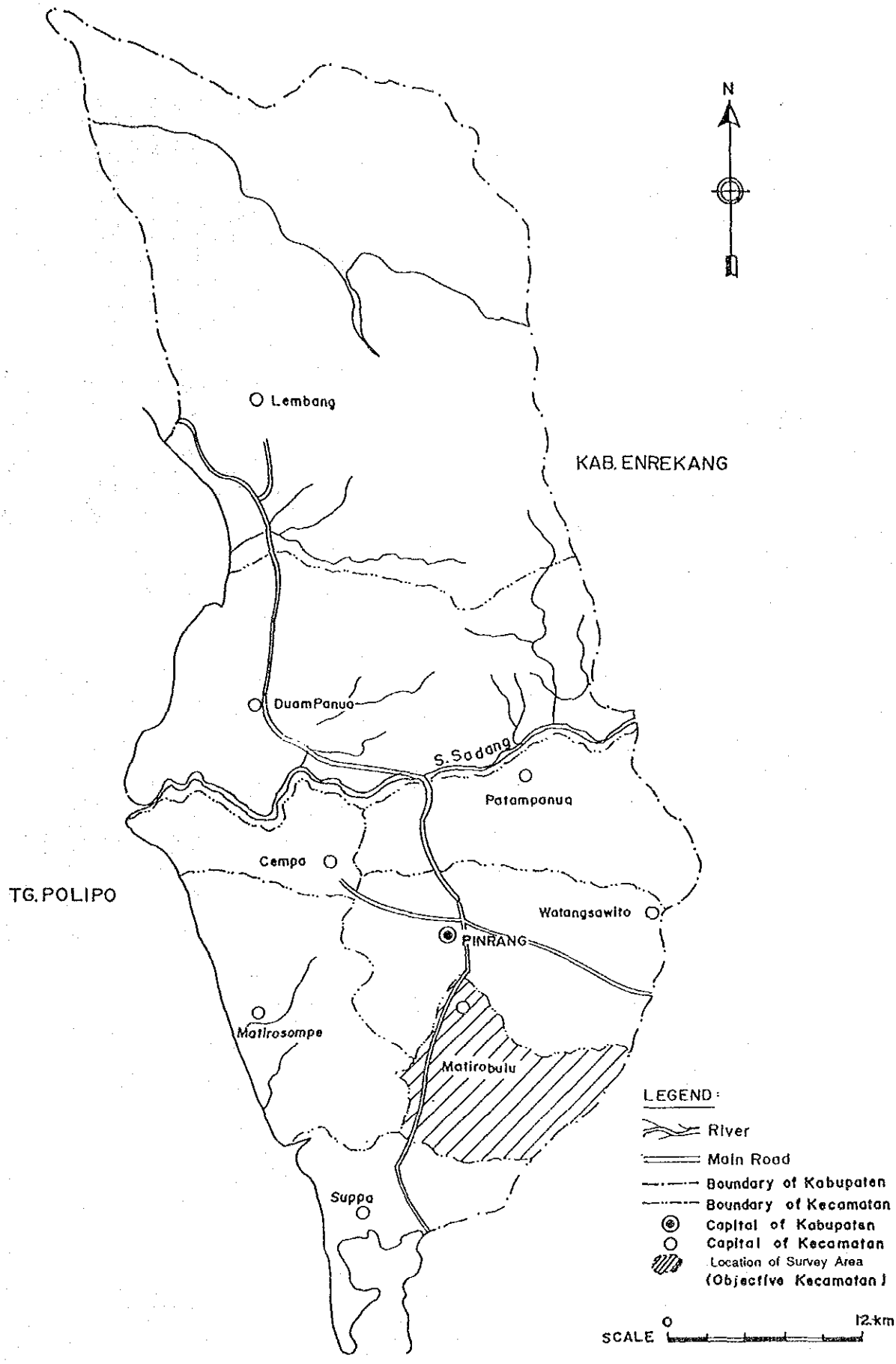

Fig. VI 1 - 3 ADMINISTRATION MAP OF KABUPATEN PINRANG

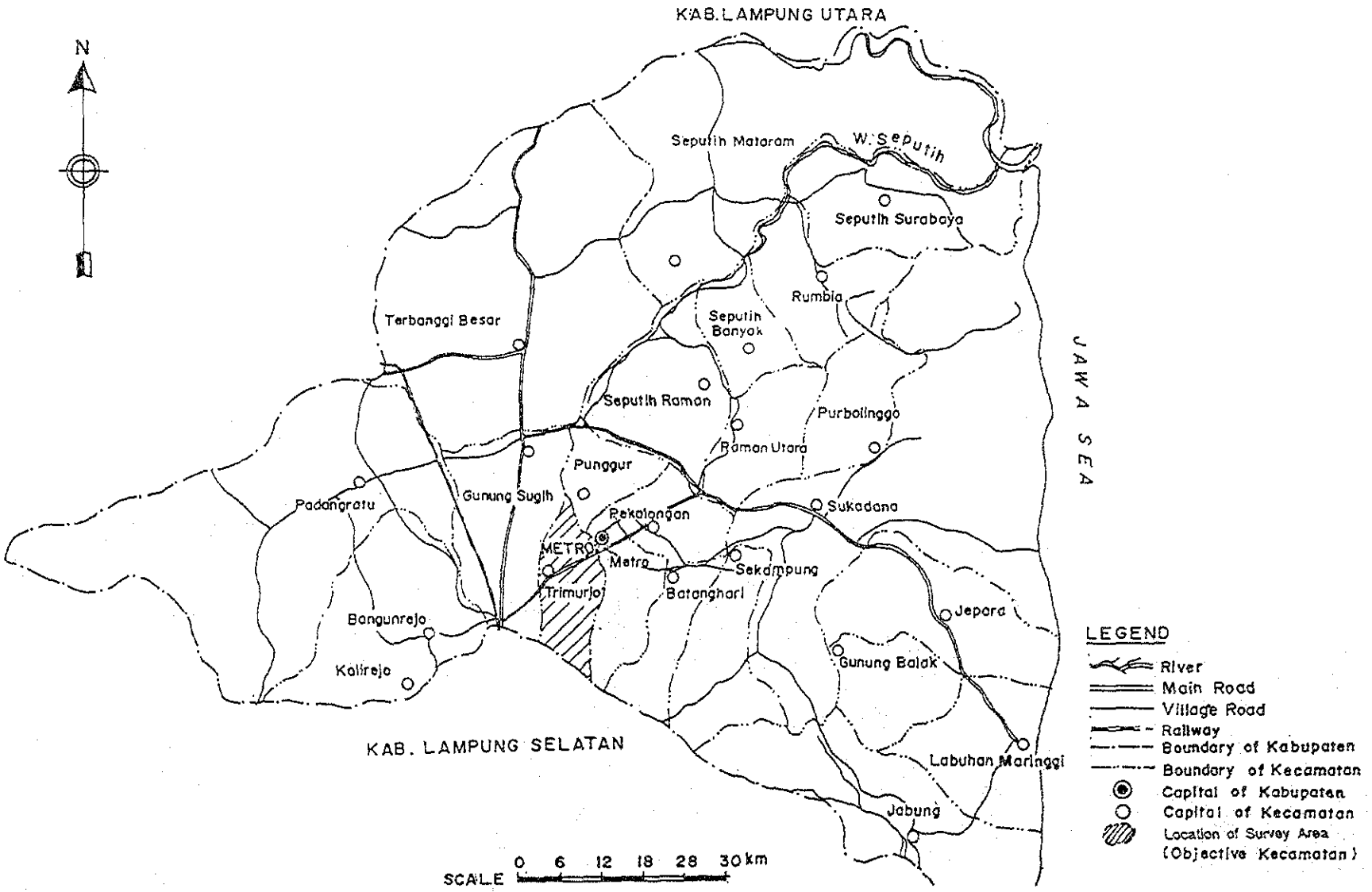

Fig. VI 1 - 4 ADMINISTRATION MAP OF KABUPATEN LAMPUNG TENGAH

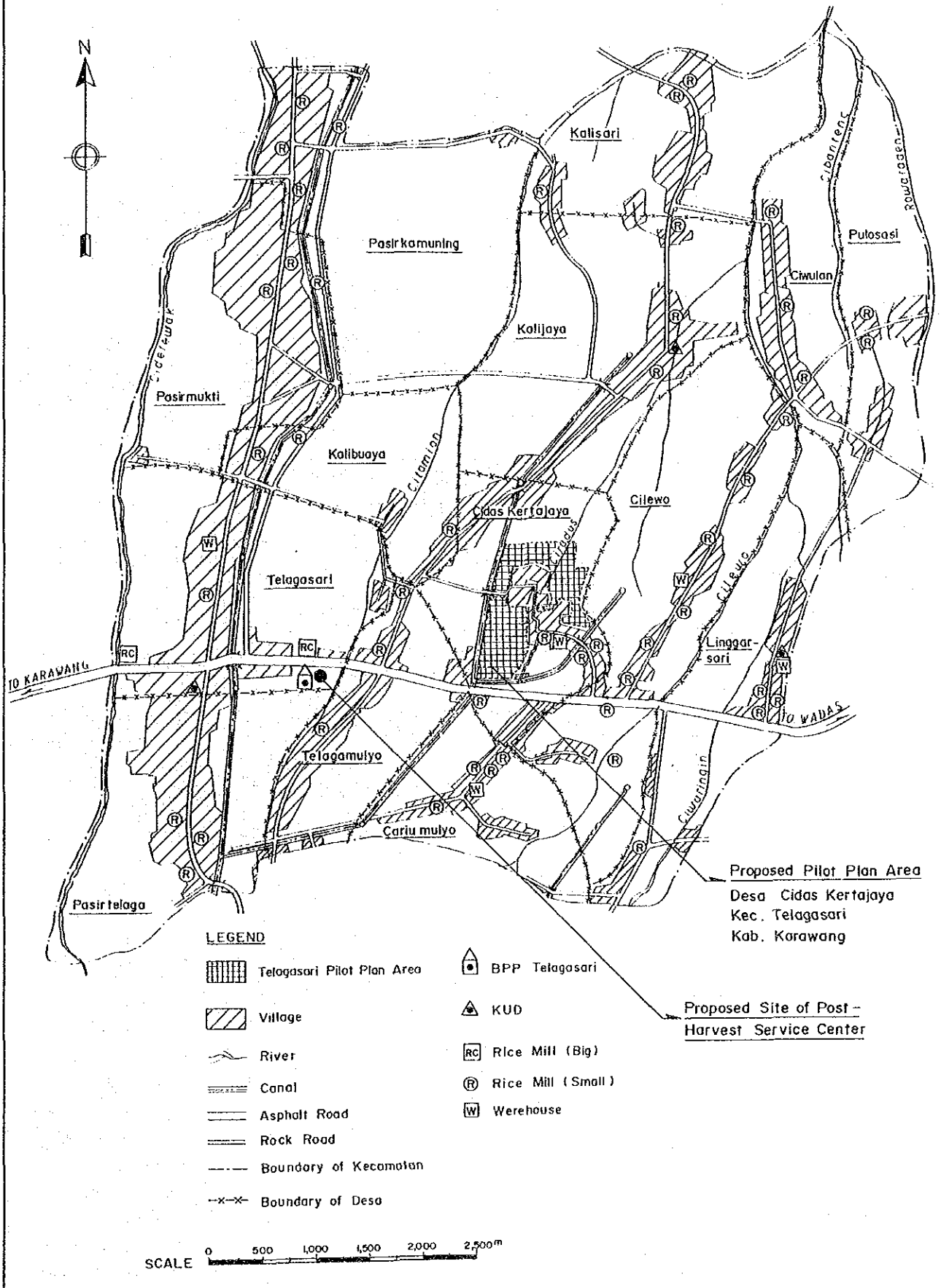

Fig. VI 1-5 GENERAL MAP OF TELAGASARI SURVEY AREA

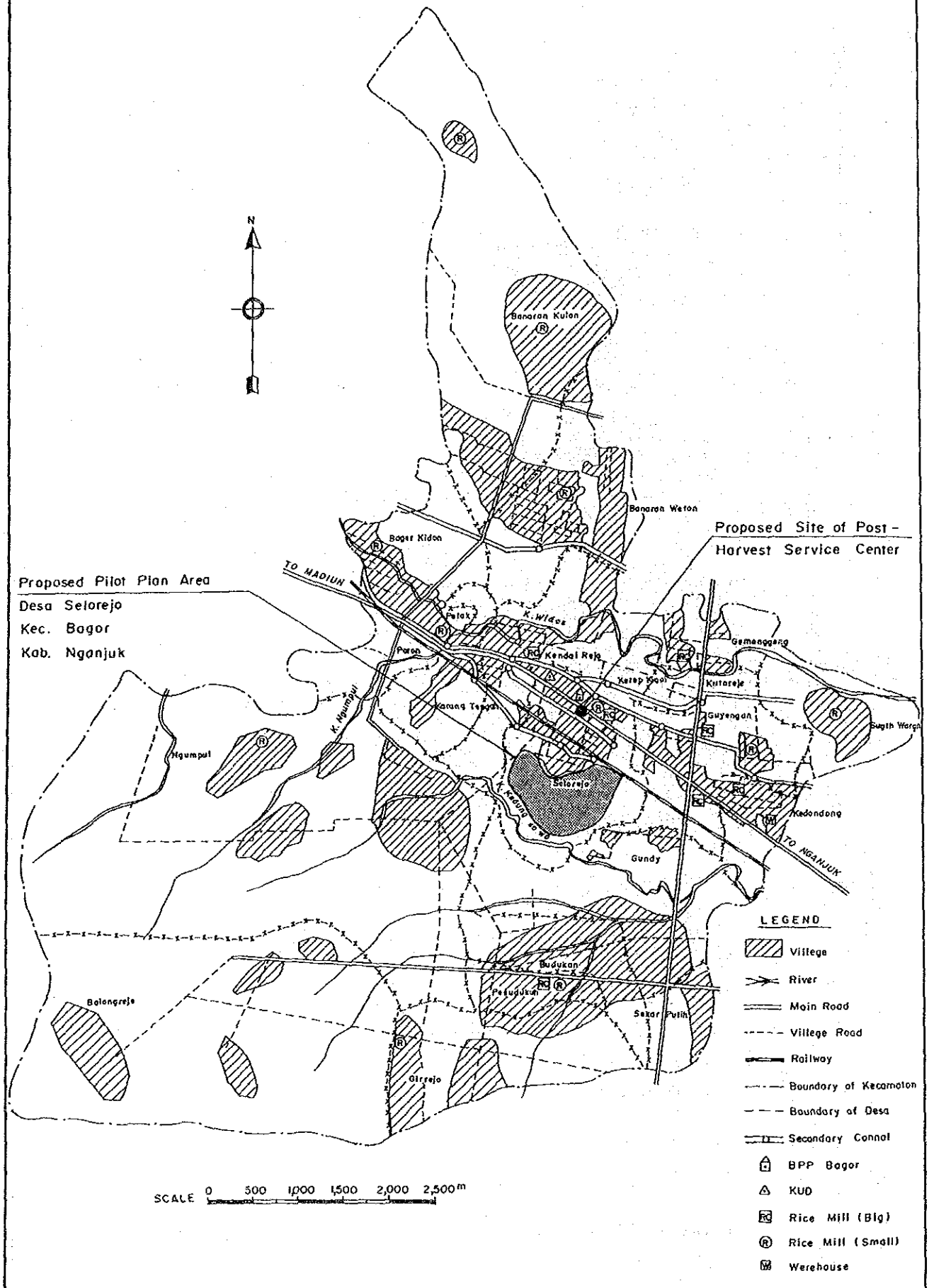

Fig. VI 1 - 6 GENERAL MAP OF BAGOR SURVEY AREA

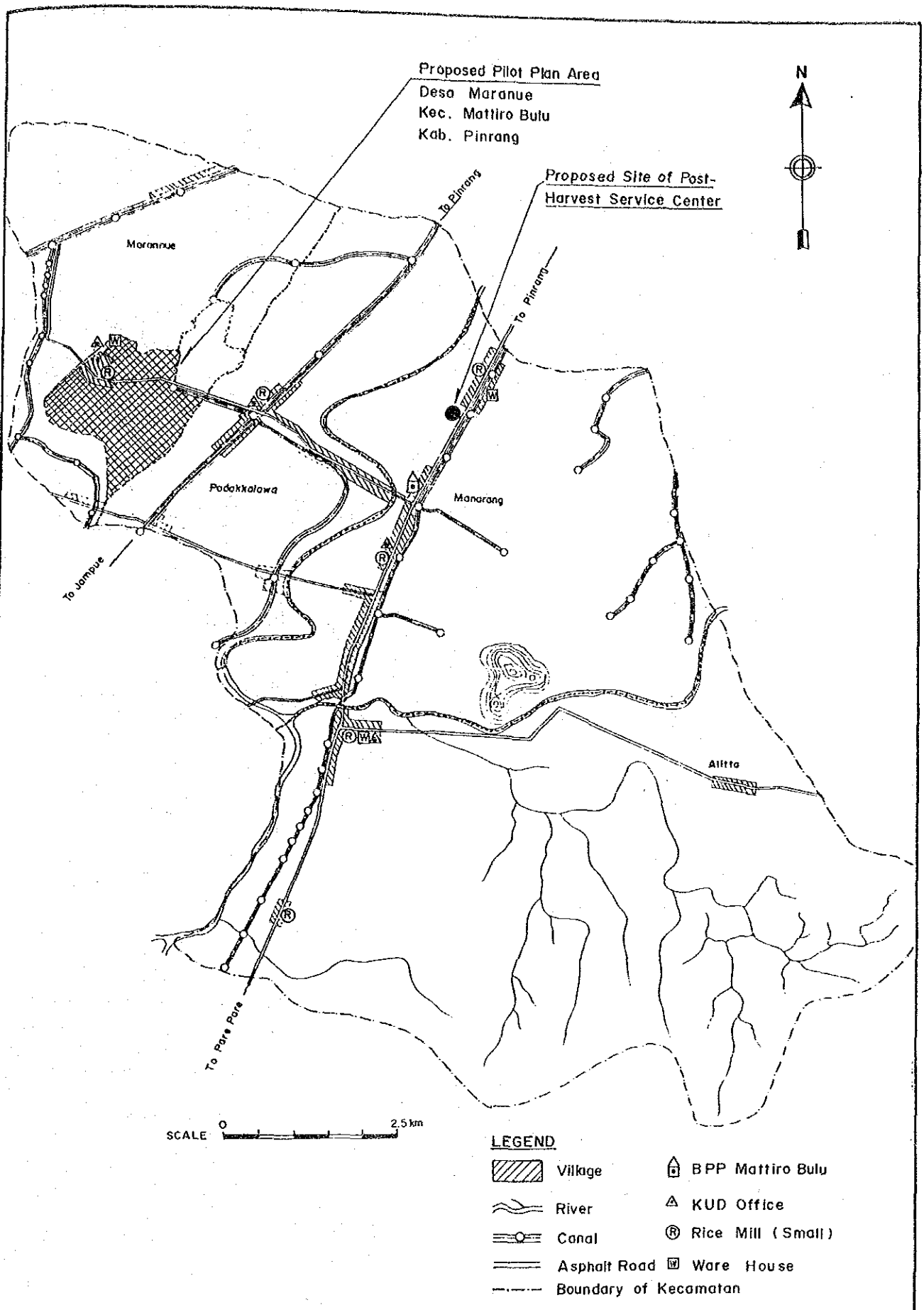

Fig. VI 1 - 7 GENERAL MAP OF MATTIRO BULU SURVEY AREA

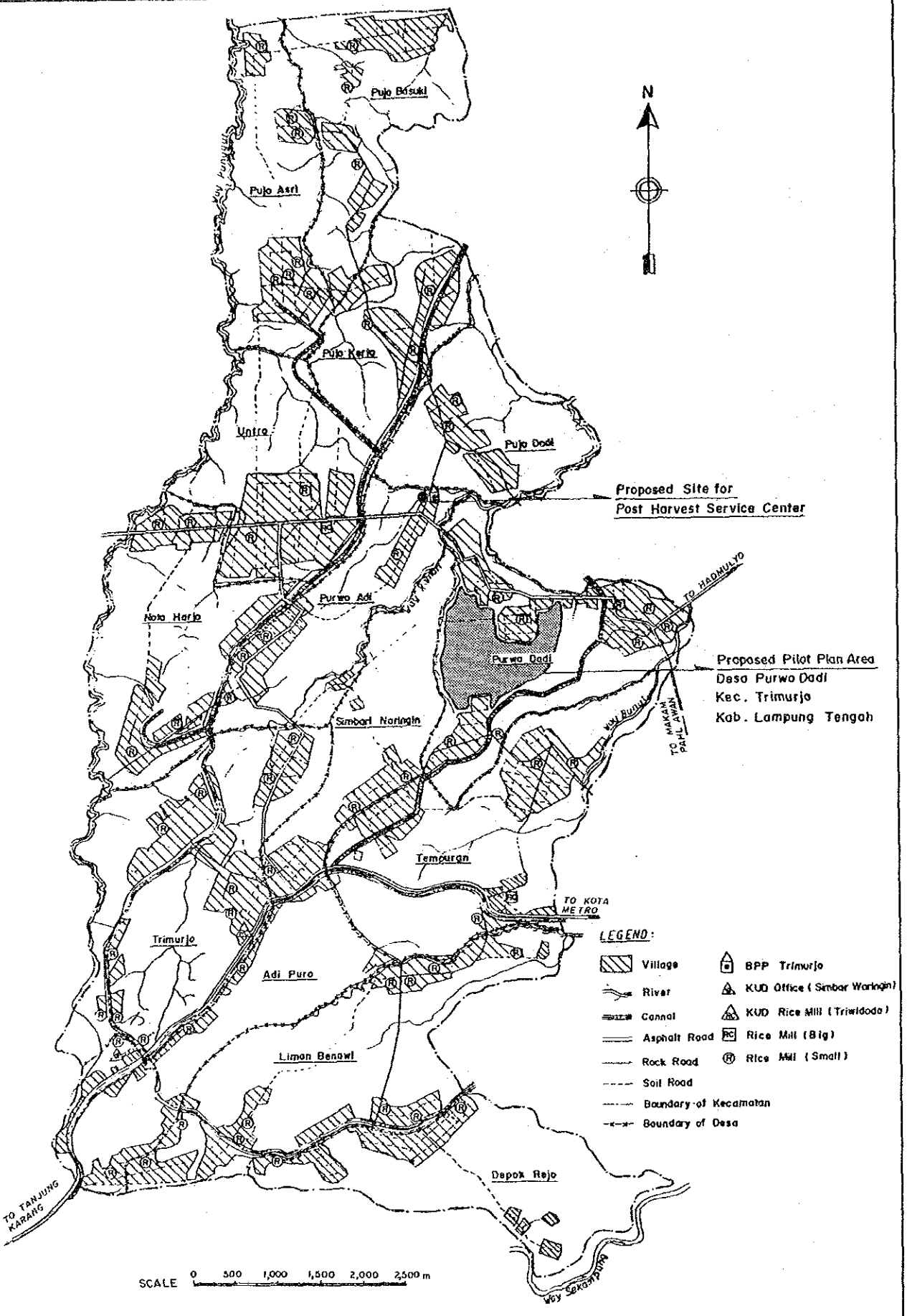

Fig. VI 1 - 8 GENERAL MAP OF TRIMURJO SURVEY AREA

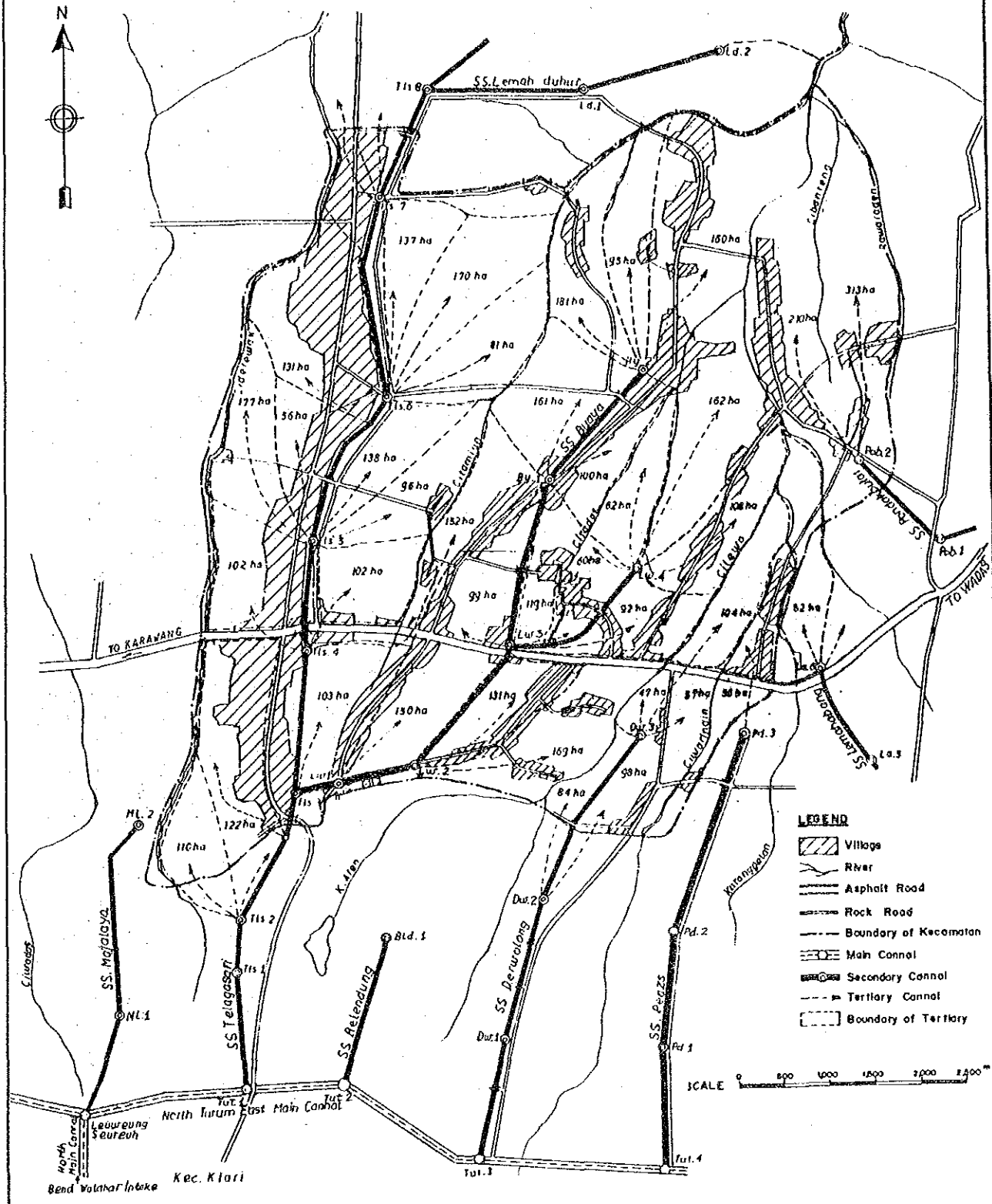

Fig. VI 1 - 9 EXISTING IRRIGATION MAP OF TELAGASARI SURVEY AREA