GOVERNMENT OF MALAYSIA

FEASIBILITY STUDY ON RATIONALIZATION AND CROP DIVERSIFICATION IN NON-GRANARY IRRIGATED AREAS IN MALAYSIA

Volume 4

Manual for Information Management System

October 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

GOVERNMENT OF MALAYSIA

FEASIBILITY STUDY ON RATIONALIZATION AND CROP DIVERSIFICATION IN NON-GRANARY IRRIGATED AREAS IN MALAYSIA

Volume 4

Manual for Information Management System

October 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

Feasibility Study on Rationalization and Crop Diversification in Non-granary Irrigated Areas in Malaysia

LIST OF REPORTS

Volume	1	Main Report
Volume	2	Crop Diversification Evaluation Methodology
Volume	3	Crop Diversification Study on Selected Schemes
Volume	4	Manual for Information Management System
Volume	5-1	State Report - Perlis
Volume	5-2	State Report - Kedah
Volume	5-3	State Report - P. Pinang
Volume	5-4	State Report - Perak
Volume	5-5	State Report - Selangor
Volume	5-6	State Report - N. Sembilan
Volume	5-7	State Report - Melaka
Volume	5-8	State Report - Johor
Volume	5-9	State Report - Pahang
Volume	5-10	State Report - Trengganu
Volume	5-11	State Report - Kelantan
Volume	5-12	State Report - Sabah
Volume	5-13	State Report - Sarawak

Feasibility Study on Rationalization and Crop Diversification in Non-granary Irrigated Areas in Malaysia

Volume 4

Manual for Information Management System

CONTENTS

LIST OF FIGURES

LIST OF TABLES

MANUAL FOR INFORMATION MANAGEMENT SYSTEM

1. General

DID maintains 924 irrigation schemes in non-granary irrigated area. The complete survey was carried out for these irrigation schemes. The purpose of the complete survey are:

1) To grasp present situation of each scheme,
2) To present basic data for evaluation of crop diversification potential, and
3) To establish database system of DID irrigation schemes.

A questionnaire method was applied to collect data on existing irrigation schemes. Questionnaires consisting Part I (physical conditions of the scheme) and Part II (data on annual planting area), were distributed to the whole States and collected within Phase I field work period. All available information collected through questionnaire were reviewed and database system had been established using database management software "dBASE IV".

Taking into account the type of data and size of database file, all the information were classified into two and stored in the two different files, "**S_INFO.DBF**" and "**S_AREA.DBF**". The former file mainly consists of Part I data and later corresponds to Part II data of the questionnaires. In addition, information retrieval system of non-granary irrigation schemes was newly developed to extract designated data. 52 programmes were prepared using dBASE IV programming language.

This manual explains basic techniques of dBASE IV and operation procedure of an information retrieval system of the DID database system.

2. Introduction to dBASE IV

2.1 Database Management System

A database is a group or collection of programmes that gives the user access to a collection of information stored as data. This collection of information is called the database. It can be considered that a database management system is a type of computerized filing system.

The data can be anything that is considered significant to an individual or organization for making decisions: financial data, book abstract, addresses, quotations and so on.

The advantages of database management system are as follows:

1) Reduce duplication of data
2) Minimize programme development time
3) Improved programme reliability
4) Improved data reliability
5) Standard format to access the data
6) Data can be shared

The dBASE IV is a relational database system. In a relational database system, the data are stored in two-dimensional tables of rows and columns. The user determines the relationships to be used as the basis for accessing information. The table are then linked internally by the database manager. A relational database system generally includes powerful tools for selecting, indexing, sorting and reporting the data.

2.2 Starting and Quit dBASE IV

(1) Starting dBASE IV

At the DOS prompt (usually C:> or D:>), type **dbase** and press Enter. The dBASE takes several seconds to load. The dBASE IV logo and copyright notice appear on the screen. Press Enter to proceed. If you want to eliminate this initial screen, type dbase command with /t option.

C:>**dbase /t**

The dBASE IV has both menu and command modes. The first one is called "Control Center". The Control Center intends to make dBASE IV easier to use for beginners. The second one is called "Command", or "Dot Prompt" mode. In this mode, you enter direct English commands.

(2) Quit dBASE IV

Once you get into a dBASE IV, you need to learn how to get out of the programme. In the Control Center, open the menu that contains Exit command by pressing the F10 key.

a. Press F10 to open the Catalog menu.
b. Press the right or left arrow key to open the Exit menu.
c. Press the down arrow key to select Quit to DOS.
d. Press Enter.

If you are in the Command/Dot Prompt mode, type **Quit** and press Enter to return to DOS.

2.3 Rules of Database File Construction

(1) File name

You must give the database file name (eight characters at maximum).

(2) Field name

You must assign column headings, field names, to each columns (fields) in the database file. A field name must:

- Not more than ten letters and numbers
- Not contain blank spaces
- Begin with a letter

Additionally, only underscore (_) can be used as special character within a field name.

(3) Field types

dBASE handles different kinds of data in different ways. You need to tell it which kind of data is contained in each column. This is called the field type or data type. Each field can be one of six types: character, float, date, memo and logical.

(4) Field width

You need to tell dBASE IV how wide the column is. The width is the number of typewriter spaces, or character spaces.

(5) Record numbers

Each time you enter a record, dBASE IV automatically gives it a number. It calls the first row RECORD 1, the second row RECORD 2, and so on.

2.4 Creating Database

Make sure the highlight is on the word <create> in the Data column of the Control Center. If highlight isn't on <create>, use the arrow keys to get in there. Press Enter to create your database file structure. You are transported to the Data Work surface.

The Data Work surface is shown in Fig. 2.1. This form is used to determine each of the fields in your database file. For each field, you must enter the field name, the field type, the field width and the number of decimals for numeric fields. The last column in the form is where you indicate whether the data is indexed by the field.

When you finished the above procedure, dBASE IV will respond with Save as : . dBASE IV asks if you wish to enter data now. Type Y to enter the data entry mode. This data entry form displays the field name and provides space for you to enter the data for each field. The cursors

is in the first character position for first field. As you enter data into each field, the cursor moves to the right. When you have completely entered the data for the field, press enter to advance to the next field.

To tell dBASE IV that you're finished, press Ctrl-End. dBASE exits from the Edit mode.

2.5 Modifying a Database File

(1) Changing the Structure of a Database File

The structure of a database file is not changed very often. Structural changes are usually in response to add some new data. The process for modifying the structure is as follows:

a From the control center, highlight database file and press **Shift-F2**.
(or from the dot prompt, type **Use "database file name"** and **modi struc**)

b. Adding a field

To add a field, move the cursor to where you want to add a new field and press **Ctrl-N.** A blank field definition is inserted above the field and you are requested to enter new field name, type, width, etc.

c. Deleting a field

To delete a field, move the cursor to the field you want to delete and press **Ctrl-U**. The field name and all of the data in that field are removed from the database file when the modified structure is saved.

d. Saving the changes

To exit from the database work surface and to save any changes, press **Ctrl-End** (or **Ctrl-W**). To abandon any changes you have made, press **Esc**.

(2) Adding Records

The most common way to add new records to an established or modified file, is to go to the BROWSE or EDIT screens and page down the last record in your file to add a new record. You can also easily get to the end of the database file, by using the GO TO menus.

(3) Removing the Records

You can remove records using a two-step process. From the BROWSE or EDIT screens, mark the record for removal by pressing **Ctrl-U** while in the record. Then, remove all records that have been marked for removal with the PACKing operation. You can choose this operation, **Erase marked records**, from the Organize menu in the Data work surface. You can remove the deletion mark while in BROWSE or EDIT modes by highlighting the marked record and then pressing **Ctrl-U**. You can remove the marks from the all marked records, by choosing the **Unmark all records** from the Organize menu.

Selecting **Erase marked records** in Database work surface actually removes the deleted records. Once the database file is packed, those records are gone. There is no un-pack or unerase command.

(4) Changing the Contents of Records

To make changes to the content of the database file, use **Edit** or **Browse** modes which you have familiar.

3. Information Retrieval System

3.1 General

The database consists of two files, "S_INFO.DBF" and "S_AREA.DBF". The data and information stored in the database are listed in Tables 3.1 and 3.2.

In order to extract and evaluate the data from database system, programmes for retrieving data item by item, State by State are developed using dBASE programming language. The specific data can be extracted and tabulated using this system. The list of programmes and items retrieved are shown in Table 3.3.

To control the above retrieving programme, menu programmes having display options are also developed. The operation procedure to retrieve the data are as follows.

3.2 Sequence of Steps

From the DOS command prompt, type the command **DBASE**, and press Return. Press return to proceed, dBASE IV dot prompt will then be displayed.

(1) Main Menu

From the dot prompt, enter **do main** to start main menu programme as shown in Fig. 3.1. The menu options at the top of the screen will appear and blinking the left most menu (Fig. 3.2). The menu bar has 4 options: "Summary by State", "Part I Data", "Part II Data" and "Exit" menu. Each menu option has a pull-down menu. In order to select and proceed to next step, highlight the option using arrow keys and press Return. Fig. 3.3 shows menu options of the main menu.

(2) State List

In case of Part-I and Part-II data, menu screen with State list is appear (Fig. 3.4). Using arrow keys, highlight name of State to be retrieved, and press Return. If you want to return to dBASE IV dot prompt, select "14 Return to dBASE IV" menu and press Return.

(3) Output Device

From the screen menu as shown in Fig. 3.5, you can choose two alternatives. If you choose "Printer" menu, the output will be directed to the printer. If you select "Screen" menu, the output will be scrolled on the display.

After sending the results to output device, you are requested to press any key to return to the Main menu.

3.3 Output

The examples of the results are shown from page 22 to 41.

Figures

Fig. 2.1 Data Work Surface

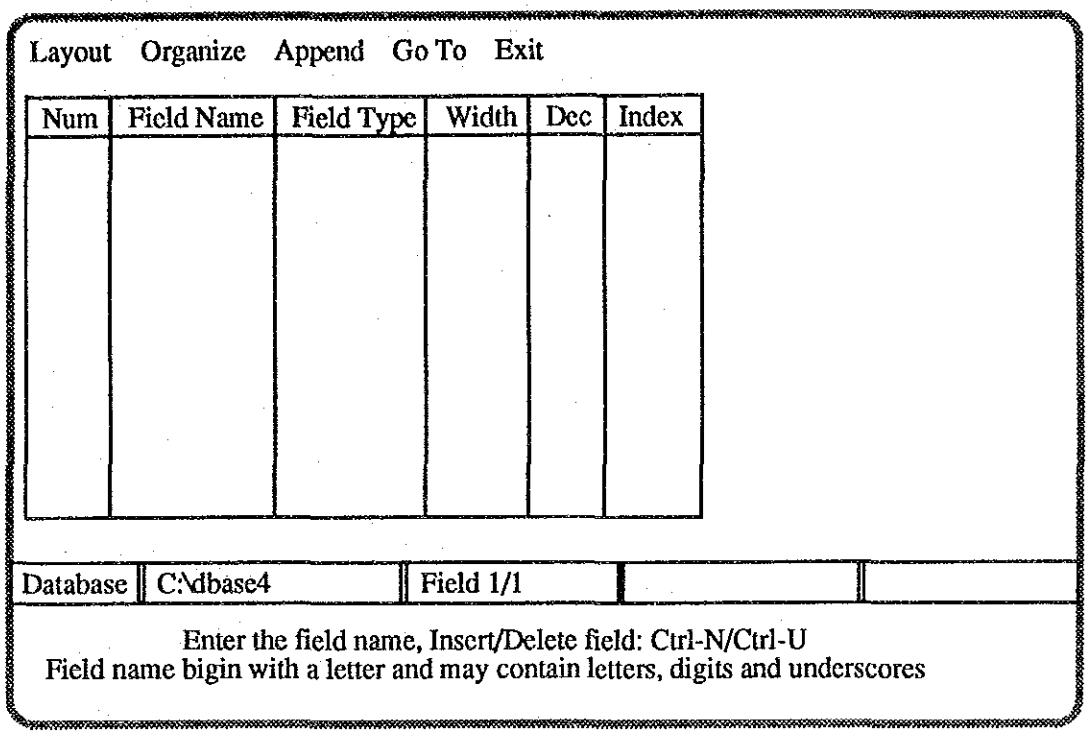


Fig. 3.1 Start the Main Menu from Dot Prompt

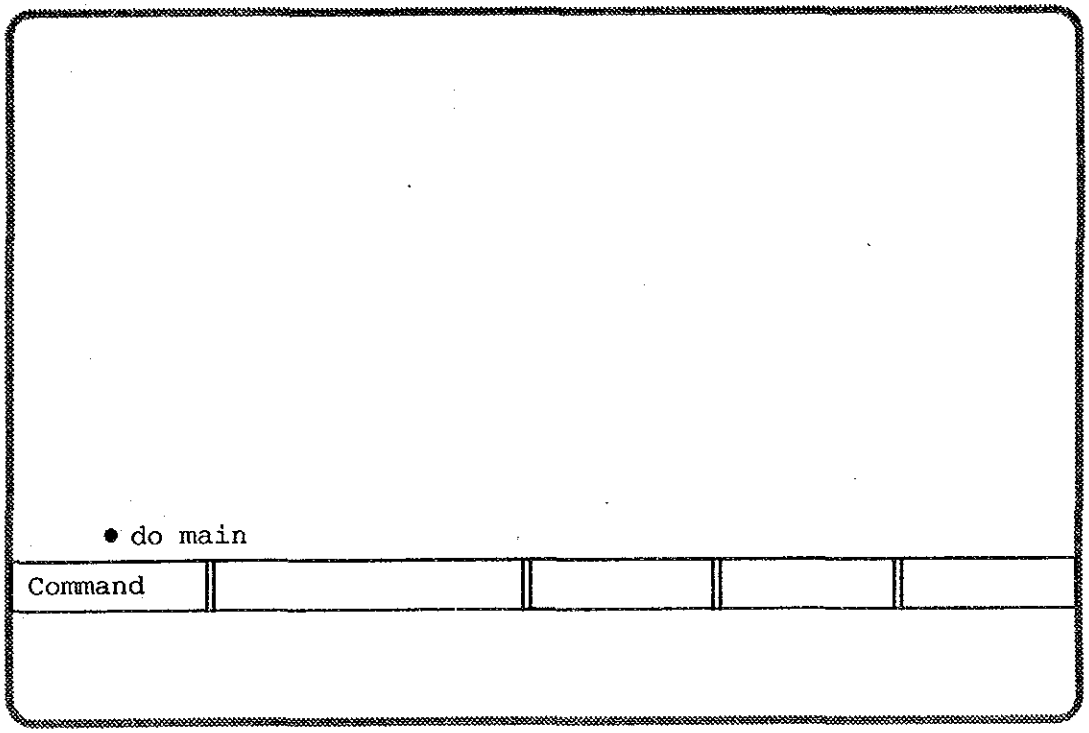


Fig. 3.2 Initial Screen of the Main Menu

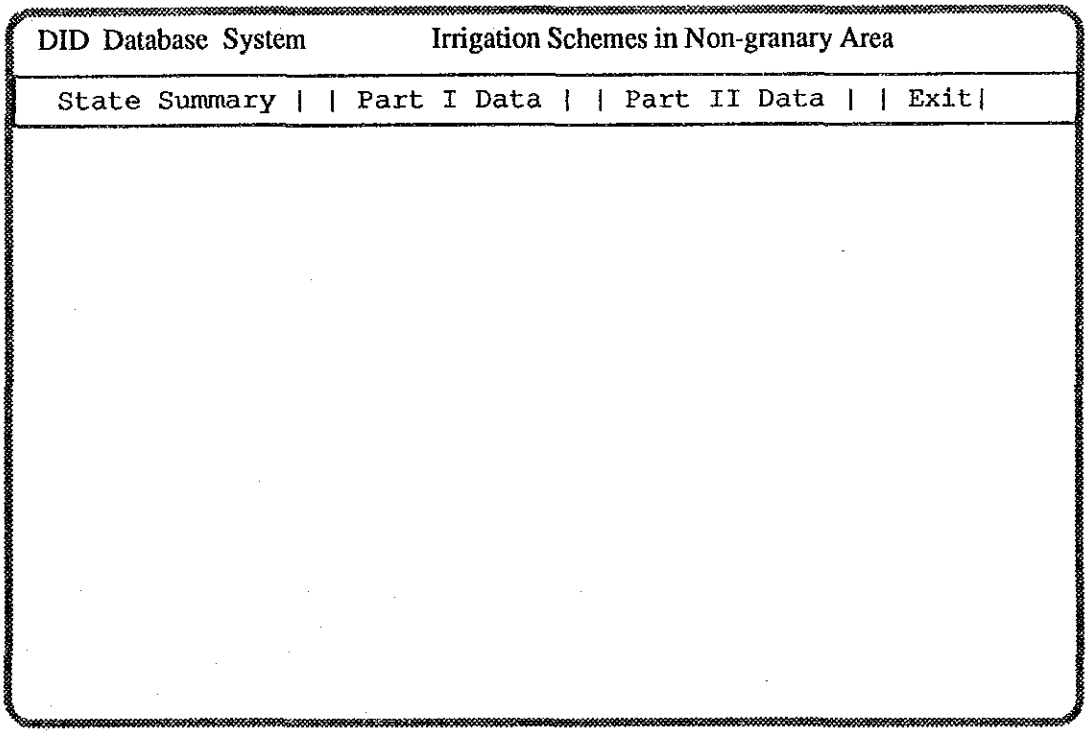


Fig. 3.3 Menu Options

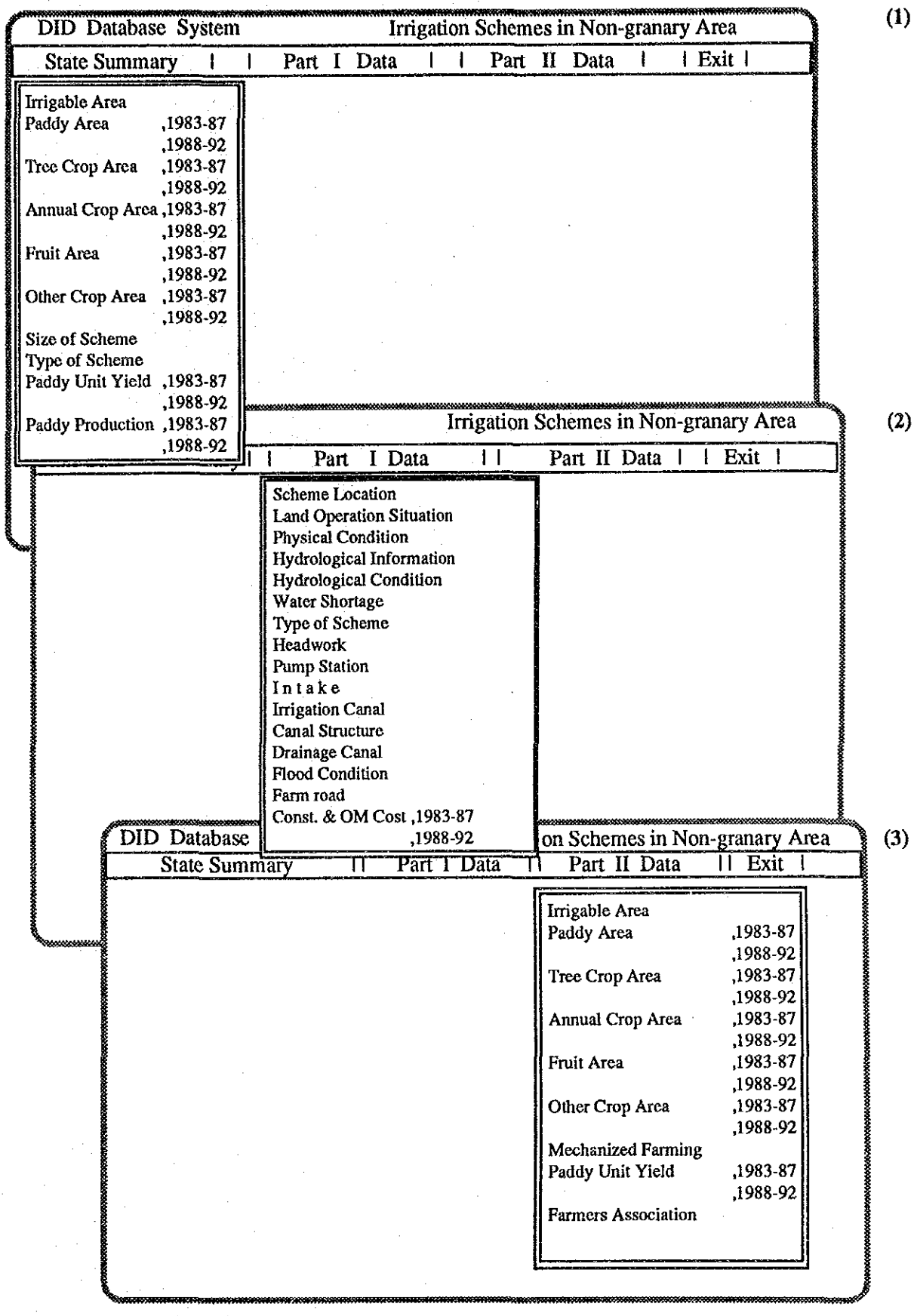


Fig. 3.4 State List

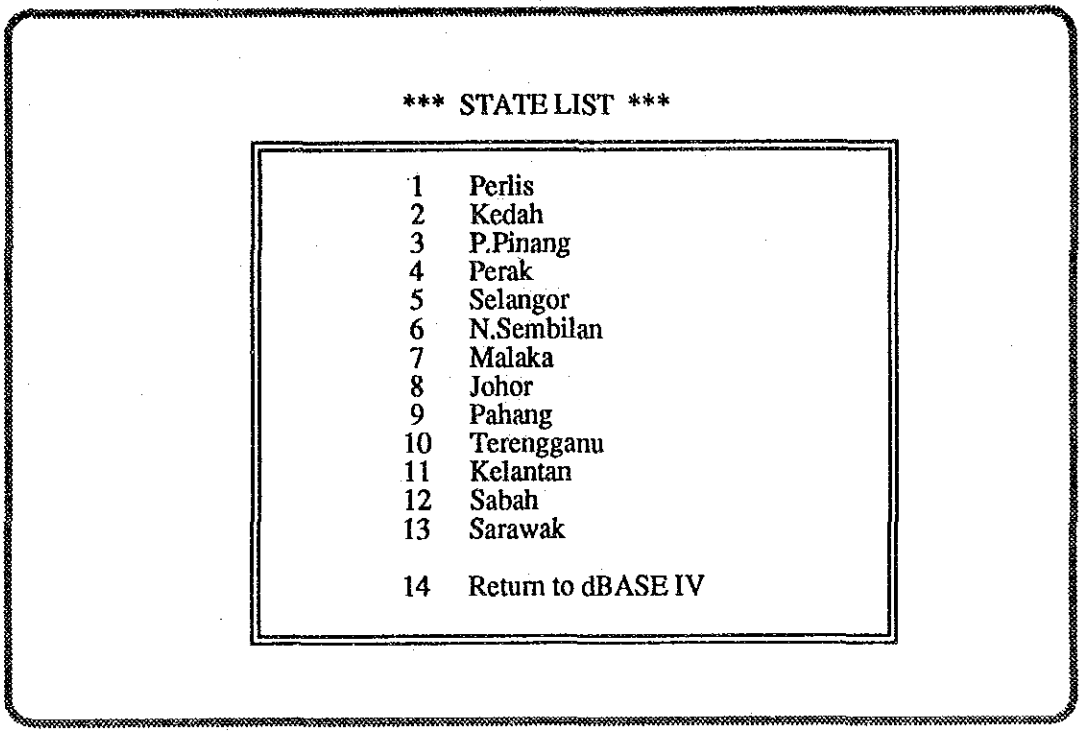
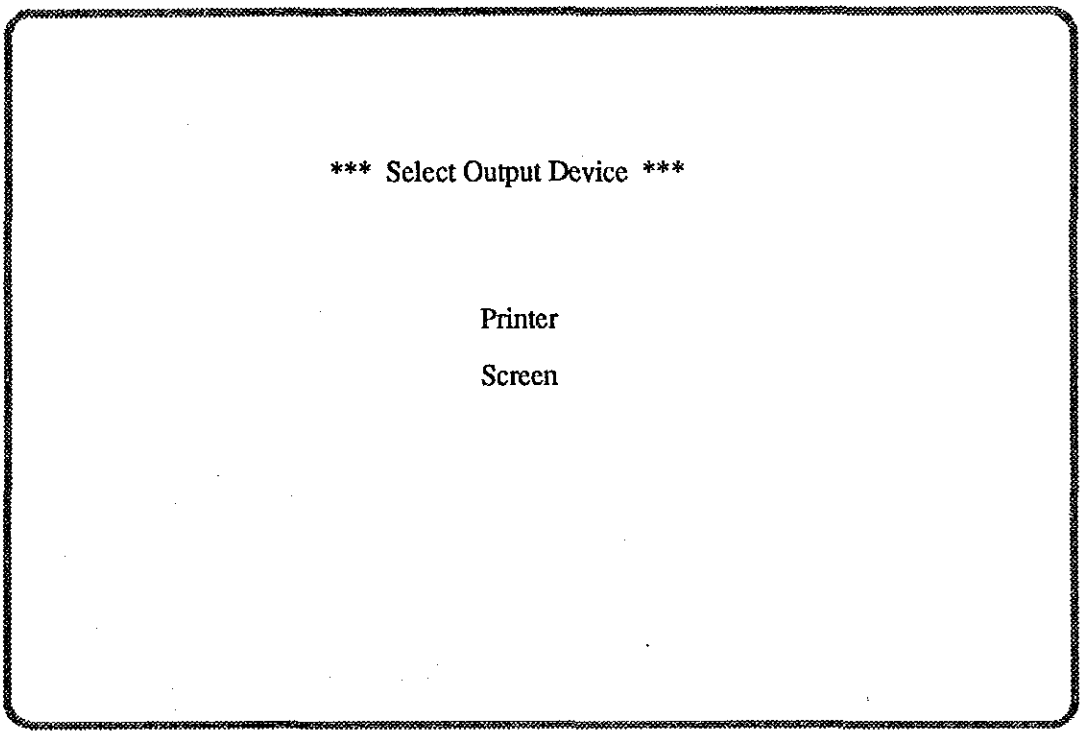


Fig. 3.5 Selection of Output Device



Tables

Table 3.1 List of Data Stored in S_INFO.DBF File (1/4)

	Item	Content of Data	Remarks
1	CODE	Code number of the scheme	
2	NAME	Name of the scheme	
3	STATE	Name of the state in the scheme area	
4	DISTRICT	District name in the scheme area	
5	MUKIM	Mukim name in the scheme area	
6	TYPE	Type of the scheme G : Gravity P : Pump CD : Controlled drainage I : Inundation O : Others	
7	C_YEAR	Year of completion	
8	KM_S_CAP	Distance from state capital	km
9	KM_D_CAP	Distance from district capital	km
10	NO_HOUSE	Number of households	
11	L_HOLD_AVE	Average land holding size	ha
12	L_HOLD_MAX	Maximum holding size	ha
13	L_HOLD_MIN	Minimum land holding size	ha
14	L_OPE_O	Area of owner operator	ha
15	L_OPE_TO	Area of tenant /owner operator	ha
16	L_OEP_T	Area of tenant operator	ha
17	L_GOV	Area of governmental land	ha
18	L_NON_GOV	Area of non-governmental land	ha
19	TOPO	Topographic condition a : Alluvial flat b : Valley bottom c : Terrace d : Hilly	
20	EL_AVE	Average elevation in the area	m
21	EL_HIGH	Highest elevation in the area	m
22	EL_LOW	Lowest elevation in the area	m
23	SLOPE	Land slope in the area	1 : X
24	SOIL	Name of soil series in the project area C : Clay HC : Heavy clay L : Loam S : Silt O : Others	

Table 3.1 List of Data Stored in S_INFO.DBF File (2/4)

	Item	Content of Data	Remarks
25	OUTSIDE_LU	Land use outside the scheme area a : Village b : Paddy field c : Oil palm d : Rubber e : Cocoa/Coconut f : Upland crops g : Grass land h : Forest i : Others	
26	RIVER_NAME	River name at diversion site	
27	R_SYSTEM	Name of river system	
28	RIVER_STA	Name of river gauging station	
29	LOW_FLOW	Annual low flow	m^3/s
30	LOWEST_LF	Annual lowest low flow	m^3/s
31	LOW_MONTH	Month of lowest low flow occurs	
32	CATCH_AREA	Catchment area at diversion site	km^2
33	RAIN_STA	Name of rainfall station	
34	METEO_STA	Name of meteorological station	
35	W_QUALITY	Irrigation water quality a : Not polluted b : Polluted by swamp water c : Polluted by effluent from rubber processing d : Polluted by effluent from oil processing e : Polluted by tin mine effluent f : Polluted by industrial effluent g : Polluted by piggery waste h : Others	
36	DESIGN_Q	Design diversion requirement	m^3/s
37	Q_MEASURE	Availability of discharge measurement at intake Y : Available N : Not available	
38	W_SHORTAGE	Water shortage situation a : No water shortage b : Occasional water shortage happen c : Frequent water shortage happen	
39	OCCASIONAL	Area under occasional water shortage	ha
40	FREQUENT	Area under frequent water shortage	ha
41	SERIOUS	Area under serious water shortage	ha

Table 3.1 List of Data Stored in S_INFO.DBF File (3/4)

	Item	Content of Data	Remarks
42	WS_REASON	Reasons of water shortage a : Shortage of river discharge b : Less flow capacity of canals by poor maintenance c : Malfunction of irrigation facilities d : Improper design of facilities e : Excessive use of water by farmer f : Others	
43	DIV_TYPE	Type of diversion structure a : Headworks b : Pumphouse c : Run-of-the river d : Others	
44	HW_YEAR	Year of completion of headworks	
45	NO_BAY	Number of gates at intake	
46	GATE_SIZE	Size of gate at intake weir	m
47	FLOOD_Q	Design flood discharge of headworks	m^3/s
48	OPE_CNDTN	Operation condition of headworks G : Good P : Poor B : Broken	
49	PUMP_YEAR	Year of completion of pump station	
50	NO_PUMP	Number of pump	
51	UNIT_CAPA	Unit capacity of pump	m3/s
52	PUMP_CAPA	Total capacity of pump	m3/s
53	PUMP_HEAD	Actual pumping head	m
54	D_POWER	Driven system of pump D : Diesel engine E : Electric motor	
55	P_OPE_CON	Operation condition of pump G : Good P : Poor B : Broken	
56	NO_IN_GATE	Number of intake gates	
57	IN_G_SIZE	Size of intake gate	m
58	G_MATERIAL	Material of gate S : Steel W : Wood	
59	I_OPE_CON	Operation condition of intake gate G : Good P : Poor	
60	M_CANAL_TL	Total length of main canal	km
61	M_CANAL_LL	Total lining length of main canal	km
62	M_CANAL_RL	Length to be rehabilitated of main canal	km
63	S_CANAL_TL	Total length of secondary canal	km
64	S_CANAL_LL	Total lining length of secondary canal	km
65	S_CANAL_RL	Length to be rehabilitated of second. canal	km

Table 3.1 List of Data Stored in S_INFO.DBF File (4/4)

	Item	Content of Data	Remarks
66	T_CANAL_TL	Total length of tertiary canal	km
67	T_CANAL_LL	Total lining length of tertiary canal	km
	T_CANAL_RL	Length to be rehabilitated of tertiary canal	km
68	NO_C_ST	Number of canal structures	
69	NO_C_GATE	Number of canal structures with gate	
70	CS_OPE_CON	Operation condition of canal structure G : Good P : Poor B : Broken	
71	DRAIN_TL	Total length of drainage canal	km
72	DRAIN_RL	Length to be rehabilitated of drainage canal	km
73	BUND_TL	Total length of dike	km
74	NO_D_ST	Number of drainage structure	
75	DS_OPE_CON	Operation condition of drainage structures G : Good P : Poor B : Broken	
76	DRAIN_GOOD	Area with good drainage condition	ha
77	DRAIN_POOR	Area with poor drainage condition	ha
78	DRAIN_DIFF	Area under difficult to drain for crop	ha
79	FLOOD_CON	Situation of flood Y : Flood N : No flood	
80	F_AREA_1Y	Area affected by annual flood	ha
81	F_AREA_5Y	Area affected by every five years	ha
82	F_AREA_MAX	Area affected by recorded maximum flood	ha
83	MAX_F_YEAR	Year of recorded maximum flood	
84	M_ROAD_TL	Total length of main road	km
85	M_ROAD_RL	Length to be rehabilitated of main road	km
86	S_ROAD_TL	Total length of secondary road	km
87	S_ROAD_RL	Length of secondary road to be rehabilitated	km
88	T_ROAD_TL	Total length of tertiary road	km
89	T_ROAD_RL	Length of tertiary road to be rehabilitated	km
90	OM_COST83	Annual O & M cost (1983)	M$
91	OM_COST84	Annual O & M cost (1984)	M$
92	OM_COST85	Annual O & M cost (1985)	M$
93	OM_COST86	Annual O & M cost (1986)	M$
94	OM_COST87	Annual O & M cost (1987)	M$
95	OM_COST88	Annual O & M cost (1988)	M$
96	OM_COST89	Annual O & M cost (1989)	M$
97	OM_COST90	Annual O & M cost (1990)	M$
98	OM_COST91	Annual O & M cost (1991)	M$
99	OM_COST91	Annual O & M cost (1991)	M$
101	C_COST	Initial investment cost	M$
102	R_COST	Major rehabilitation cost	M$

Table 3.2 List of Data Stored in S_AREA.DBF File (1/3)

	Item	Content of Data	Remarks
1	CODE	Code number of the scheme	
2	NAME	Name of the scheme	
3	STATE	Name of the state in the scheme area	
4	DISTRICT	District name in the scheme area	
5	TYPE	Type of the scheme G : Gravity P : Pump CD : Controlled drainage I : Inundation O : Others	
6	GROSS_AREA	Gross irrigable area	ha
7	I_AREA_MS	Irrigable area in main season	ha
8	I_AREA_OS	Irrigable area in off season	ha
9	PMS83	Paddy planted area, 1983 main season	ha
10	POS83	-do- 1983 off season	ha
11	PMS84	-do- 1984 main season	ha
12	POS84	-do- 1984 off season	ha
13	PMS85	-do- 1985 main season	ha
14	POS85	-do- 1985 off season	ha
15	PMS86	-do- 1986 main season	ha
16	POS86	-do- 1986 off season	ha
17	PMS87	-do- 1987 main season	ha
18	POS87	-do- 1987 off season	ha
19	PMS88	-do- 1988 main season	ha
20	POS88	-do- 1988 off season	ha
21	PMS89	-do- 1989 main season	ha
22	POS89	-do- 1989 off season	ha
23	PMS90	-do- 1990 main season	ha
24	POS90	-do- 1990 off season	ha
25	PMS91	-do- 1991 main season	ha
26	POS91	-do- 1991 off season	ha
27	PMS92	-do- 1992 main season	ha
28	POS92	-do- 1992 off season	ha
29	T_CROP83	Tree crop planted area, 1983	ha
30	T_CROP84	-do- 1984	ha
31	T_CROP85	-do- 1985	ha
32	T_CROP86	-do- 1986	ha
33	T_CROP87	-do- 1987	ha
34	T_CROP88	-do- 1988	ha
35	T_CROP89	-do- 1989	ha
36	T_CROP90	-do- 1990	ha
37	T_CROP91	-do- 1991	ha
38	T_CROP92	-do- 1992	ha

Table 3.2 List of Data Stored in S_AREA.DBF File (2/3)

	Item	Content of Data	Remarks
39	A_CROP83	Annual crop planted area, 1983	ha
40	A_CROP84	-do- 1984	ha
41	A_CROP85	-do- 1985	ha
42	A_CROP86	-do- 1986	ha
43	A_CROP87	-do- 1987	ha
44	A_CROP88	-do- 1988	ha
45	A_CROP89	-do- 1989	ha
46	A_CROP90	-do- 1990	ha
47	A_CROP91	-do- 1991	ha
48	A_CROP92	-do- 1992	ha
49	FRUIT83	Fruit crop planted area, 1983	ha
50	FRUIT84	-do- 1984	ha
51	FRUIT85	-do- 1985	ha
52	FRUIT86	-do- 1986	ha
53	FRUIT87	-do- 1987	ha
54	FRUIT88	-do- 1988	ha
55	FRUIT89	-do- 1989	ha
56	FRUIT90	-do 1990	ha
57	FRUIT91	-do- 1991	ha
58	FRUIT92	-do- 1992	ha
59	OTHER83	Other land use, 1983	ha
60	OTHER84	-do- 1984	ha
61	OTHER85	-do- 1985	ha
62	OTHER86	-do- 1986	ha
63	OTHER87	-do- 1987	ha
64	OTHER88	-do- 1988	ha
65	OTHER89	-do- 1989	ha
66	OTHER90	-do- 1990	ha
67	OTHER91	-do- 1991	ha
68	OTHER92	-do- 1992	ha
69	IDLE_YEAR	Year of first occurrence of idle land	
70	CAUSE_IDLE	Reason of occurrence of idle land	
71	F_SYSTEM	Type of farming system a : Individual farmers b : Farmers unit c : Group farming d : Farmers association e : Others	
72	PLOT_SIZE	Standard plot size	ha
73	F_MACHIN	Type of farm machineries presently used a : Land preparation b : Transplanting c : Weeding d : Spraying e : Harvesting f : No use in any form	

Table 3.2 List of Data Stored in S_AREA.DBF File (3/3)

	Item	Content of Data	Remarks
74	PMSY83	Unit yield, main season paddy in 1983	t/ha
75	POSY83	-do- off season paddy in 1983	t/ha
76	PMSY84	-do- main season paddy in 1984	t/ha
77	POSY84	-do- off season paddy in 1984	t/ha
78	PMSY85	-do- main season paddy in 1985	t/ha
79	POSY85	-do- off season paddy in 1985	t/ha
80	PMSY86	-do- main season paddy in 1986	t/ha
81	POSY86	-do- off season paddy in 1986	t/ha
82	PMSY87	-do- main season paddy in 1987	t/ha
83	POSY87	-do- off season paddy in 1987	t/ha
84	PMSY88	-do- main season paddy in 1988	t/ha
85	POSY88	-do- off season paddy in 1988	t/ha
86	PMSY89	-do main season paddy in 1989	t/ha
87	POSY89	-do- off season paddy in 1989	t/ha
88	PMSY90	-do- main season paddy in 1990	t/ha
89	POSY90	-do- off season paddy in 1990	t/ha
90	PMSY91	-do- main season paddy in 1991	t/ha
91	POSY91	-do- off season paddy in 1991	t/ha
92	PMSY92	-do- main season paddy in 1992	t/ha
93	POSY92	-do- off season paddy in 1992	t/ha
94	F_ASSO	Existence of farmers' association Y : Yes N : No	
95	NO_F_ASSO	Number of farmers' association	
96	F_COOP	Existence of farmers' cooperatives Y : Yes N : No	
97	NO_F_COOP	Number of farmers' cooperatives	

Table 3.3 List of Programmes (1/2)

Name of Program.	Information and Data Retrieved	
Summary state by state		
Nation01	Irrigable Area by State	
Nation02	Paddy planted area,	1983 - 1987
Nation03	-do-	1988 - 1992
Nation04	Tree crop area,	1983 - 1987
Nation05	-do- 1988 - 1992	
Naition06	Annual crop area,	1983 - 1987
Nation07	-do-	1988 - 1992
Nation08	Fruits planted area,	1983 - 1987
Nation09	-do-	1988 - 1987
Nation10	Other crop area,	1983 - 1987
Naiton11	-do- 1988 - 1992	
Naiton12	Size of scheme	
Nation13	Type of scheme	
Nation14	Unit yield of paddy,	1983 - 1987
Nation15	-do-	1988 - 1992
Naiton16	Paddy production by state,	1983 - 1987
Naiton17	-do-	1988 - 1992
Part-1 Data (Physical conditions of the scheme)		
Inf1	Location of Irrigation Schemes	
Inf2	Land Operation Situation by Scheme	
Inf3	Physical Condition of Schemes	
Inf4	Hydrological Information of Schemes	
Inf5	Hydrological Condition of Schemes	
Inf6	Water Shortage of Schemes	
Inf7	Type of Schemes and Facilities by Schemes	
Inf8	Situation of Existing Headworks	
Inf9	Situation of Existing Pumping Stations	
Inf10	Situation of Existing Intake Facilities	
Inf11	Situation of Existing Irrigation Canals	
Inf12	Farmers Association and Cooperatives by Scheme	
Inf13	Situation of Existing Drainage Canals	
Inf14	Situation of Flood	
Inf15	Situation of Existing Farm Roads	
Inf16	Construction, Major Rehabilitation and Annual O&M Cost, 1983 - 1987	
Inf17	-do- 1988 - 1992	

Table 3.3 List of Programmes (2/2)

Name of Program.	Information and Data Retrieved	
Part-2 Data		
Area1	Irrigable Area by Scheme	
Area2	Paddy planted area,	1983 - 1987
Area3	-do-	1988 - 1992
Area4	Tree crop area,	1983 - 1987
Area5	-do- 1988 - 1992	
Area6	Annual crop area,	1983 - 1987
Area7	-do-	1988 - 1992
Area8	Fruit planted area,	1983 - 1987
Area9	-do-	1988 - 1992
Area10	Other crop area,	1983 - 1987
Area11	-do- 1988 - 1992	
Area12	Condition of mechanized farming	
Area13	Unit yield of paddy,	1983 - 1987
Area14	-do-	1988 - 1992
Area15	Condition of farmers' association	

Table N - 1 Irrigable Area by State

(ha)

State	Gross Area	Irrigable Area Main Paddy	Off Paddy
Perlis	4,911	4,215	475
Kedah	20,995	17,133	13,510
P.Pinang	17,639	3,541	3,525
Perak	15,249	12,722	12,236
Selangor	2,238	939	486
N.Sembilan	12,031	10,934	5,285
Melaka	12,100	7,149	2,279
Johor	4,791	4,010	3,924
Pahang	24,287	17,430	4,503
Terengganu	20,382	9,083	5,543
Kelantan	15,418	10,667	3,185
Sabah	27,279	17,163	7,774
Sarawak	20,688	15,136	2,387
Total	198,008	130,122	65,112

Table N - 2 Trend of Irrigated Paddy Area by State (1983 - 1987)

State	Main Season Paddy						Off Season Paddy					
	1983 (ha)	1984 (ha)	1985 (ha)	1986 (ha)	1987 (ha)	1987/1983	1983 (ha)	1984 (ha)	1985 (ha)	1986 (ha)	1987 (ha)	1987/1983
Perlis	4,086	4,086	4,081	4,084	4,084	1.00	0	0	0	0	0	**.**
Kedah	10,022	11,683	11,544	11,934	12,455	1.24	7,778	8,447	7,900	8,380	9,172	1.18
P.Pinang	3,598	3,617	3,267	3,358	3,518	0.98	3,370	3,754	3,257	3,308	3,504	1.04
Perak	8,061	6,159	7,438	7,181	7,113	0.88	6,517	5,584	4,042	5,020	6,833	1.05
Selangor	300	281	252	238	170	0.57	151	63	248	52	153	1.01
N.Sembilan	2,994	2,989	2,513	2,417	1,996	0.67	610	719	968	703	906	1.49
Melaka	2,936	2,909	2,145	1,781	2,003	0.68	553	473	596	545	552	1.00
Johor	1,579	1,780	1,435	1,572	1,109	0.70	1,381	1,483	868	1,385	1,177	0.85
Pahang	1,378	1,648	1,557	1,570	1,631	1.18	352	276	483	497	735	2.09
Terengganu	6,455	6,338	6,362	6,479	6,417	0.99	2,023	2,293	1,595	1,831	2,947	1.46
Kelantan	6,158	6,703	6,133	6,983	7,452	1.21	1,101	1,574	1,617	1,769	1,791	1.63
Sabah	11,400	12,004	11,926	12,942	12,486	1.10	1,377	2,198	2,092	2,967	2,748	2.00
Sarawak	2,770	3,999	5,880	5,731	5,477	1.98	380	298	322	109	155	0.41
Total	61,737	64,196	64,533	66,270	65,911		25,593	27,162	23,988	26,566	30,673	

Table N - 4 Trend of Tree Crop Area by State (1983 - 1987)

(ha)

State	1983	1984	1985	1986	1987
Perlis	0	0	0	0	0
Kedah	0	295	295	295	425
P.Pinang	55	55	55	55	55
Perak	8	40	40	561	561
Selangor	85	86	87	89	89
N.Sembilan	395	548	766	1,104	1,253
Melaka	103	135	328	353	532
Johor	0	0	8	14	23
Pahang	67	67	79	79	161
Terengganu	216	216	216	216	216
Kelantan	2	2	2	2	2
Sabah	0	0	3	5	7
Sarawak	0	0	243	260	399
Total	931	1,444	2,122	3,033	3,723

Table N - 6 Trend of Annual Crop Area by State (1983 - 1987)

(ha)

State	1983	1984	1985	1986	1987
Perlis	29	34	34	41	46
Kedah	40	38	91	101	110
P.Pinang	122	131	129	129	284
Perak	248	161	156	250	64
Selangor	29	35	42	58	70
N.Sembilan	23	23	35	50	59
Melaka	124	125	156	214	275
Johor	0	0	0	20	41
Pahang	8	8	15	3	21
Terengganu	29	33	34	44	51
Kelantan	292	237	320	463	349
Sabah	0	2	177	13	10
Sarawak	6	6	6	115	243
Total	950	833	1,195	1,501	1,623

Table N - 8 Trend of Fruit Crop Area by State (1983 - 1987)

(ha)

State	1983	1984	1985	1986	1987
Perlis	0	0	0	0	0
Kedah	0	0	0	0	0
P.Pinang	0	0	0	0	2
Perak	108	158	198	200	212
Selangor	14	21	58	77	100
N.Sembilan	0	0	3	6	27
Melaka	0	0	12	16	16
Johor	41	41	41	41	41
Pahang	0	0	0	5	5
Terengganu	197	189	191	205	205
Kelantan	0	0	0	0	0
Sabah	0	0	0	0	32
Sarawak	0	0	0	0	36
Total	360	409	503	550	676

Table N - 10 Trend of Other Crop Area by State (1983 - 1987)

(ha)

State	1983	1984	1985	1986	1987
Perlis	0	0	0	0	0
Kedah	0	0	0	0	0
P.Pinang	0	0	0	0	0
Perak	0	0	0	0	0
Selangor	0	0	0	0	0
N.Sembilan	2	2	2	2	8
Melaka	0	0	0	0	0
Johor	0	0	0	0	0
Pahang	0	0	0	0	23
Terengganu	0	0	0	0	0
Kelantan	0	0	0	0	0
Sabah	0	0	0	0	0
Sarawak	0	0	0	0	17
Total	2	2	2	2	48

Table N - 12 Size of Scheme Area by State

(ha)

State	Irrigable Area A < 50 ha	50 - 100	100 - 150	150 - 200	A>=200 ha
Perlis	63	293	372	669	2,818
	(2)	(4)	(3)	(4)	(9)
Kedah	519	1,246	943	2,190	12,235
	(15)	(17)	(8)	(13)	(22)
P.Pinang	60	60	216	332	2,873
	(3)	(1)	(2)	(2)	(6)
Perak	746	1,047	848	1,378	8,703
	(23)	(14)	(7)	(8)	(11)
Selangor	312	317	0	310	0
	(11)	(4)	(0)	(2)	(0)
N.Sembilan	2,569	2,489	1,488	1,051	3,337
	(91)	(36)	(13)	(6)	(10)
Melaka	641	888	769	690	4,164
	(22)	(13)	(6)	(4)	(9)
Johor	278	210	604	514	2,404
	(8)	(3)	(5)	(3)	(4)
Pahang	4,354	4,194	1,602	2,028	5,361
	(192)	(59)	(13)	(12)	(14)
Terengganu	287	875	565	162	7,275
	(10)	(13)	(5)	(1)	(10)
Kelantan	862	1,456	1,208	713	6,538
	(31)	(21)	(10)	(4)	(11)
Sabah	367	973	545	1,028	14,250
	(11)	(15)	(5)	(6)	(19)
Sarawak	0	407	1,181	527	13,021
	(0)	(5)	(10)	(3)	(20)
Total	11,058	14,455	10,341	11,592	82,979
	(419)	(205)	(87)	(68)	(145)

Table N - 13 Type of Scheme by State

(ha)

State	Gravity	Pump	Grav. & Pump	Grav. & C.Drain.	Control Drainage	Pump & Inundation	Inundation	Others
Perlis	3,457	164			594			
Kedah	4,171	7,738	2,266		1,100			
P.Pinang	1,121	1,114	1,134		22		150	
Perak	7,645	5,020						
Selangor	742	150			47			
N.Sembilan	9,937	356	175					
Melaka	4,626	281	1,902		214			96
Johor	2,954	1,056						
Pahang	3,915	2,781	285			409	8,997	
Terengganu	1,262	6,204			1,666			
Kelantan	8,316	2,218	91					60
Sabah	7,207	7,753	1,840		222			81
Sarawak	444	1,658			13,034			
Total	55,797	36,493	7,693		16,899	409	9,147	237

Table N - 14 Unit Yield of Paddy by State (1983 - 1987)

(ton/ha)

State	1983		1984		1985		1986		1987	
	Main	Off	Main	Off	Main	Off	Main	Off	Main	Off
Perlis	3.6		3.6		3.7		3.7		3.7	
Kedah	3.0	2.9	3.2	2.8	2.9	2.9	3.8	3.5	3.7	3.5
P.Pinang	1.7	3.1	2.1	2.6	1.4	2.1	3.2	2.1	4.0	4.3
Perak	3.0	2.0	2.5	2.9	2.6	2.4	3.0	2.9	2.9	2.9
Selangor	2.5	2.2	2.3	1.0	2.4	2.5	2.5	2.2	2.6	2.4
N.Sembilan	4.0	3.3	3.5	3.3	3.3	3.4	3.6	3.5	4.0	4.7
Melaka	2.7	3.0	3.0	2.7	3.0	3.0	2.9	3.0	2.6	2.7
Johor	2.6	2.7	3.0	3.2	2.7	2.5	2.9	2.9	2.9	2.7
Pahang	1.9	2.0	2.4	1.9	2.4	2.5	2.7	2.8	2.6	2.6
Terengganu	2.6	2.9	2.4	2.6	2.8	3.1	2.9	3.5	3.2	3.4
Kelantan	2.6	4.3	3.3	4.1	3.2	3.5	3.5	3.8	3.5	3.4
Sabah	2.0	2.7	2.0	2.7	2.1	2.7	2.2	3.0	2.2	3.0
Sarawak	2.3	1.6	2.4	2.4	2.4	2.0	2.5	2.8	2.5	2.3

Table N - 16 Paddy Production by State (1983 - 1987)

(ton)

State	1983		1984		1985		1986		1987	
	Main	Off	Main	Off	Main	Off	Main	Off	Main	Off
Perlis	14,796		14,802		14,936		14,940		14,950	
Kedah	30,525	22,301	37,838	23,947	33,523	22,721	45,223	29,503	46,357	31,825
P.Pinang	6,200	10,191	7,598	9,588	4,576	6,716	10,674	7,041	14,132	14,929
Perak	23,481	12,347	14,943	15,784	18,517	9,701	21,240	14,740	20,615	19,652
Selangor	628	228	641	66	609	608	591	116	436	371
N.Sembilan	10,666	1,258	9,218	1,626	7,454	2,454	7,915	1,755	6,347	3,308
Melaka	8,007	1,634	8,603	1,285	6,517	1,784	5,154	1,632	5,154	1,489
Johor	4,177	3,767	5,358	4,724	3,751	2,150	4,512	4,037	3,196	3,176
Pahang	2,270	697	3,470	499	3,234	1,222	3,550	1,365	4,261	1,278
Terengganu	16,566	5,792	15,178	5,759	17,533	4,943	18,686	6,447	20,713	9,993
Kelantan	11,711	4,737	16,823	6,378	14,769	5,577	19,236	6,242	20,969	5,419
Sabah	8,417	2,158	8,697	2,416	9,441	2,410	9,742	2,720	9,323	2,778
Sarawak	5,729	435	7,846	710	13,992	648	14,450	308	13,734	248
	143,173	65,546	151,014	72,782	148,852	60,933	175,913	75,906	180,185	94,466

Table I - 1 Location of Irrigation Schemes

State : Selangor

Code	Scheme	District	Mukim	Distance from State Capital (km)	Distance from District Capital (km)
SG001	Sg. Buloh	Petaling	Sg. Buloh	26	19
SG002	Sg. Air Hitam	Hulu Langat	Kajang	26	8
SG003	Kg. Batu 30	Ulu Selangor	Ulu Yam	80	20
SG004	Kg. Kalong Tengah	Ulu Selangor	Ulu Yam	80	24
SG005	Kuang	Gombak	Rawang	49	20
SG006	Jalan Enam Kaki	Hulu Langat	Beranang	50	22
SG007	Batu 19 3/4	Hulu Langat	Hulu Langat	52	25
SG008	Kuala Lui	Hulu Langat	Hulu Langat	49	22
SG009	Sesapan Bt Minangkabau	Hulu Langat	Beranang	50	22
SG010	Beranang II	Hulu Langat	Beranang	52	24
SG011	Bukit Kepong	Hulu Langat	Beranang	50	22
SG012	Paya Lebar	Hulu Langat	Hulu Langat	58	32
SG013	Sg. Rinching Hilir	Hulu Langat	Hulu Langat	32	10
SG014	Kuala Pajam	Hulu Langat	Beranang	54	26
SG015	Sg. Merab	Sepang	Dengkil	64	22
SG016	Bt. 17, Dusun Tua	Hulu Langat	Hulu Langat	47	21
SG017	Sg. Panjang	Sabah Bernam	Sg. Panjang	119	15

Table I - 2 Land Operation Situation by Scheme

State : Selangor

Code	Scheme	No of Household	Holding Size Ave. (ha)	Max. (ha)	Min. (ha)	Land Holding Situation Owner (ha)	Own/Tenant (ha)	Tenant (ha)	Land Tenure Situation Government (ha)	Non Gov. (ha)
SG001	Sg. Buloh	282	0.6	1		89			5	84
SG002	Sg. Air Hitam								26	
SG003	Kg. Batu 30	20	1.0	2		8	6	17		30
SG004	Kg. Kalong Tengah	40	1.4	4		37	9	26	1	70
SG005	Kuang	72	1.0	2	1	220			216	4
SG006	Jalan Enam Kaki	350	0.5	3		73				73
SG007	Batu 19 3/4		1.0	2	1					20
SG008	Kuala Lui		0.7	2		11				11
SG009	Sesapan Bt Minangkabau	350	0.5	3		168	9			177
SG010	Beranang II	350	0.5	3		23				
SG011	Bukit Kepong		1.2	4		55	3			58
SG012	Paya Lebar		1.0	4						20
SG013	Sg. Rinching Hilir	50	1.2	3		68				68
SG014	Kuala Pajam		1.6	3		36				36
SG015	Sg. Merab		1.1	3		32			9	23
SG016	Bt. 17, Dusun Tua		1.3	4						88
SG017	Sg. Panjang	186	1.3	3	1	1,000				

Table I - 3 Physical Condition of Scheme

State : Selangor

Code	Scheme	*1 Topo-graphy	Elevation Ave. (m)	Elevation High (m)	Elevation Low (m)	Slope (1:X)	Soil	*2 Land Use Outside
SG001	Sg. Buloh	a	15.0	16.2	14.7	500	C	ac
SG002	Sg. Air Hitam	a	22.0			500	L	cd
SG003	Kg. Batu 30	a	38.5	39.0	38.0	1,000	C	adi
SG004	Kg. Kalong Tengah	a	45.6	46.0	45.0	1,000	C	adi
SG005	Kuang	a	30.5	31.0	30.0	500	C,S	ai
SG006	Jalan Enam Kaki	a	40.9	44.8	37.1	500	C	ade
SG007	Batu 19 3/4	a	76.0	76.5	75.5	400	C	ae
SG008	Kuala Lui	a	68.6	73.0	65.0	400	C	ae
SG009	Sesapan Bt Minangkabau	a	40.9	44.8	37.1	500	C	ade
SG010	*Beranang II*	*a*	*40.9*	*44.8*	*37.1*	*500*	C	ade
SG011	Bukit Kepong	a	40.9	44.8	37.1	500	C	ade
SG012	Paya Lebar	a	100.0	100.5	99.5	400	C	ae
SG013	Sg. Rinching Hilir	a	40.9	44.8	37.1	500	C	ade
SG014	Kuala Pajam	a	40.9	44.8	37.1	500	C	ade
SG015	Sg. Merab	a	25.0	25.5	24.5	600	L	acd
SG016	Bt. 17, Dusun Tua	a	64.1	64.6	59.5	400	C	ae
SG017	Sg. Panjang	b	3.5	4.0	3.0	1,000	O	abceg

Remarks *1 a : Alluvial flat b : Valley bottom
c : Terrace d : Hilly

*2 a : Village b : Paddy field
c : Oil palm d : Rubber
e : Cocoa/Coconut f : Upland crops
g : Grassland h : Forest
i : Others

Table I - 4 Hydrological Information of Schemes

State : Selangor

Code	Scheme	River System	River Name	River Sta	Rain Sta	Meteo Sta
SG001	Sg. Buloh	Str. of Malacca	Sg. Buloh		3215001	P.Jaya
SG002	Sg. Air Hitam	Sg. Ramal	Sg. Air Hitam		2917106	44254
SG003	Kg. Batu 30	Sg. Liam	Sg. Pedang		3416002	Btg.Kali
SG004	Kg. Kalong Tengah	Sg. Liam	Sg. Kalong		3416002	Btg.Kali
SG005	Kuang	Sg. Selangor	Sg. Kuang		3215035	Kuang
SG006	Jalan Enam Kaki	Sg. Semenyih	Sg. Sompo & Sg. Puteh		2818110	44254
SG007	Batu 19 3/4	Sg. Langat	Sg. Chongkak		3118102	
SG008	Kuala Lui	Sg. Langat	Sg. Lui	3118401	3119002	
SG009	Sesapan Bt Minangkabau	Sg.Semenyih	Sg. Beranang		2818110	44254
SG010	Beranang II	Sg. Semenyih	Sg. Beranang		2818110	44254
SG011	Bukit Kepong	Sg. Semenyih	Sg. Sombo		2818110	44254
SG012	Paya Lebar	Sg. Langat	Sg. Lui	3118401	3119002	
SG013	Sg. Rinching Hilir	Sg. Semenyih	Sg. Rinching		2918109	44254
SG014	Kuala Pajam	Sg. Semenyih	Sg. Pajam		2918110	
SG015	Sg. Merab	Sg. Langat	Sg. Merab		2717114	44254
SG016	Bt. 17, Dusun Tua	Sg. Langat	Sg. Langat		3118102	
SG017	Sg. Panjang	Sg. Bernam	Sg. Bernam		3813411	

Table I - 5 Hydrological Condition of Schemes

State : Selangor

Code	Scheme	River Name	Catchment Area (km2)	Low Flow (m3/s)	L.Low Flow (m3/s)	L.Flow Month	* Water Quality
SG001	Sg. Buloh	Sg. Buloh	62	4.60	2.20	Jun	g
SG002	Sg. Air Hitam	Sg. Air Hitam	8	1.20	1.00	June	a
SG003	Kg. Batu 30	Sg. Pedang	10	0.26	0.19	Jan	a
SG004	Kg. Kalong Tengah	Sg. Kalong	23	0.43	0.11	Jan	h
SG005	Kuang	Sg. Kuang	19	3.70	1.80	Jun	a
SG006	Jalan Enam Kaki	Sg. Sompo & Sg. Puteh	7	8.40	2.60	Jun	a
SG007	Batu 19 3/4	Sg. Chongkak	102	3.50	1.70		a
SG008	Kuala Lui	Sg. Lui	69	3.50	1.80		a
SG009	Sesapan Bt Minangkabau	Sg. Beranang	89		1.30	Jun	a
SG010	Beranang II	Sg. Beranang	58	14.00	13.00		a
SG011	Bukit Kepong	Sg. Sombo	32	14.00	4.30	Jun	a
SG012	Paya Lebar	Sg. Lui	26	3.50	1.80		a
SG013	Sg. Rinching Hilir	Sg. Rinching	120	7.10	2.20		a
SG014	Kuala Pajam	Sg. Pajam	47				a
SG015	Sg. Merab	Sg. Merab	9	3.20	0.20	May	a
SG016	Bt. 17, Dusun Tua	Sg. Langat	204	6.28	3.05		a
SG017	Sg. Panjang	Sg. Bernam	1400	14.30	7.40	Jun	a

* Remark a : Not polluted
b : Polluted by swamp water
c : Polluted by effluent from rubber processing
d : Polluted by effluent from palm oil processing
e : Polluted by tin mine effluent
f : Polluted by industrial effluent
g : Polluted by piggery waste
h : Others

Table I - 6 Water Shortage of Schemes

State : Selangor

Code	Scheme	Design Discharge (m3/s)	Disch. Meas.	*1 Water Short.	Occasion. W. Short. (ha)	Frequent W. Short. (ha)	Serious W. Short. (ha)	*2 Reason
SG001	Sg. Buloh		N					
SG002	Sg. Air Hitam		N	c				a
SG003	Kg. Batu 30	0.10	N	a				
SG004	Kg. Kalong Tengah	0.20	N	a				
SG005	Kuang	2.80	N	c	20			ae
SG006	Jalan Enam Kaki	0.50	N	b	10			ad
SG007	Batu 19 3/4	0.10	N	a				
SG008	Kuala Lui	0.20	N	a				
SG009	Sesapan Bt Minangkabau	0.50	N	c		20		ad
SG010	Beranang II	0.20	N	c		23		ad
SG011	Bukit Kepong	0.20	N	b	20			ad
SG012	Paya Lebar	0.30	N	a				
SG013	Sg. Rinching Hilir	0.40	N	a				
SG014	Kuala Pajam	0.10	N	b				ae
SG015	Sg. Merab	0.20	N	a				
SG016	Bt. 17, Dusun Tua	0.30	N	a				
SG017	Sg. Panjang		N	c			1,000	f

Remarks *1 a : No water shortage b : Occasional water shortage happen
c : Frequent water shortage happen

*2 a : Shortage of river discharge b : Less flow capacity of cnals by poor maintenance
c : Malfunction of irrigation facilities d : Inproper design of irrigation facilities
e : Excessive use of water by farmers

Table I - 7 Type of Scheme and Facilities by Scheme

State : Selangor

Code	Scheme	Completion Year	*1 Type of Scheme	*2 Intake Facil.	No of Pump	Canal Length (km)	Drain Length (km)	Bund Length (km)	Road Length (km)
SG001	Sg. Buloh	1950	G	a			11		5
SG002	Sg. Air Hitam	1972	G	c			1	2	
SG003	Kg. Batu 30	1969	G	a		3	1		1
SG004	Kg. Kalong Tengah	1932	G	a		5	3		2
SG005	Kuang	1970	CD	a		4	4		26
SG006	Jalan Enam Kaki	1960	G	c		3	2	2	
SG007	Batu 19 3/4	1936	G	c		1	2		
SG008	Kuala Lui	1936	G	c		2	1		
SG009	Sesapan Bt Minangkabau	1936	G	c		17	8	10	2
SG010	Beranang II	1940	G	c		1	1		1
SG011	Bukit Kepong	1962	G	c		4	4	2	
SG012	Paya Lebar	1935	G	c		2	1		2
SG013	Sg. Rinching Hilir	1966	G	c		2	2	5	
SG014	Kuala Pajam	1964	G	c		2	2		
SG015	Sg. Merab	1968	G	c		1	4		
SG016	Bt. 17, Dusun Tua	1935	G	c		4	2		1
SG017	Sg. Panjang	1985	P	b	4	27	20		47

Remarks *1 G : Gravity P : Pumping I : Inundation CD : Controlled drainage O : Others

*2 a : Headworks b : Pumphouse c : Run-of-river d : Other

Table I - 8 Situation of Existing Headworks

State : Selangor

Code	Scheme	Completion Year	No of Bays	Gate Size (m)	Disign Flood (m3/s)	* Condition of Gate
SG001	Sg. Buloh	1950	4	4.57x1.1		G
SG003	Kg. Batu 30	1969	1	3.65x0.9		G
SG004	Kg. Kalong Tengah	1930	1	9.15x0.9		G
SG005	Kuang	1961	5	1.0x2.0		G

* Remark G : Good P : Poor (needs repair) B : broken

Table I - 9 Situation of Existing Pumping Stations

State : Selangor

Code	Scheme	Completion Year	No of Pumps	Unit Capacity (m3/s/unit)	Total Capacity (m3/s)	Pump Head (m)	*1 Driven Power	*2 Condition of Pump
SG017	Sg. Panjang	1985	4	6.00	24.00	3.3	D	G

Remark *1 E : Electric motor D : Diesel engine

*2 G : Good P : Poor (needs repair) B : Broken

Table I - 10 Situation of Existing Intake Facilities

State : Selangor

Code	Scheme	No of Gates	Gate Size (m)	*1 Gate Material	*2 Condition of Gate
SG002	Sg. Air Hitam	1	3.65x0.9	S	P
SG004	Kg. Kalong Tengah	1	1.1x1.37	W	G
SG006	Jalan Enam Kaki	1	0.1x1.52	S	G
SG009	Sesapan Bt Minangkabau	1	6.78x2.3	S	G
SG010	Beranang II	1	5.6x1.67	S	P
SG011	Bukit Kepong	1	3.65x0.9	S	G
SG013	Sg. Rinching Hilir	1	3.65x0.9	S	P
SG014	Kuala Pajam	1	3.65x0.9	S	G
SG015	Sg. Merab	3	1.8x1.8	W	

Remark *1 S : Steel W : Wood

*2 G : Good P : Poor (needs repair) B : broken

Table I - 11 Situation of Existing Irrigation Canals

State : Selangor

(km)

Code	Scheme	Canal Length				Lining Canal Length				Length to be Repaired			
		Main	Second.	Tertiary	Total	Main	Second.	Tertiary	Total	Main	Second.	Tertiary	Total
SG001	Sg. Buloh												
SG002	Sg. Air Hitam												
SG003	Kg. Batu 30	1.4	1.6			1.4	1.5						
SG004	Kg. Kalong Tengah	3.9	0.6			3.5	0.5						
SG005	Kuang	3.6				0.1							
SG006	Jalan Enam Kaki		3.4				3.4						
SG007	Batu 19 3/4		1.1				1.1						
SG008	Kuala Lui		1.8				1.8				1.0		
SG009	Sesapan Bt Minangkabau	11.0	6.0			11.0	6.0			4.0	2.0		
SG010	Beranang II	1.2				1.2				1.2			
SG011	Bukit Kepong		3.6										
SG012	Paya Lebar		2.0				2.0						
SG013	Sg. Rinching Hilir		2.4								2.4		
SG014	Kuala Pajam		2.0				0.6						
SG015	Sg. Merab	1.4				1.4							
SG016	Bt. 17, Dusun Tua		4.0				4.0				4.0		
SG017	Sg. Panjang	11.2	15.4				15.4						

Table I - 12 Situation of Existing Canals Structures

State : Perlis

Code	Scheme	No of Structures	No of Gates	Condition of * Structures
PR001	Ban Seberang Ramai	2	2	G
PR002	Ban Bukit Tok Poh	1	1	G
PR003	Ban Wang Bintong	4	2	G
PR004	Tali Air Bt. Pahat Kanan	3	2	G
PR005	Sg. Siran	60	41	G
PR006	Alur Baroh	2	2	G
PR007	Pdg. Melangit	90	73	G
PR008	Alor Sena	9	9	G
PR009	Bukit Tau	3	3	G
PR010	Kubang Badak	20	16	G
PR011	Kg. Belukar	29	19	G
PR012	Kg. Darat/Tok Daboi	28	28	G
PR013	Sg. Repoh			
PR014	Titi Tinggi	3	3	G
PR015	Pdg. Siding	71	62	G
PR016	Kok Klang	18	3	G
PR017	Kuala Tunggang	10	6	G
PR018	Alor Melaka	3	3	P
PR019	Sg. Santan	165	142	GP
PR020	Pdg. Telela	3	3	G
PR021	Kg. Parit	28	23	P
PR022	Sg.Siran/Jln.Abi/Kurong Batang	38	27	G

* Remarks G : Good P : Poor (needs repair) B : Broken

Table I - 13 Situation of Existing Drainage Canals

State : Selangor

Code	Scheme	Drain Canal Length Total (km)	To be Rehabili. (km)	Bund Length (km)	Drainage Structures Total Nos	Condition *	Drainage Conditions Good (ha)	Poor (ha)	Difficult (ha)
SG001	Sg. Buloh	10.5	7.9				89		
SG002	Sg. Air Hitam	1.2		2.4			26		
SG003	Kg. Batu 30	1.4					30		
SG004	Kg. Kalong Tengah	2.5					71		
SG005	Kuang	3.6			2	G2	220		
SG006	Jalan Enam Kaki	2.0		1.6	2	G2	63	10	
SG007	Batu 19 3/4	1.5			2	G2	20		
SG008	Kuala Lui	1.0			2	G2	10		
SG009	Sesapan Bt Minangkabau	8.0		10.0	3	G3	157	20	
SG010	Beranang II	1.2			2	G2	23		
SG011	Bukit Kepong	3.6		1.6		G4	48	10	
SG012	Paya Lebar	1.0			1	G	20		
SG013	Sg. Rinching Hilir	2.4		4.8	7	P	25	43	
SG014	Kuala Pajam	2.0			3	G2P1	30	6	
SG015	Sg. Merab	4.4					32		
SG016	Bt. 17, Dusun Tua	1.5			1	G	87	1	
SG017	Sg. Panjang	20.0			6	G	1,000		

* Remarks G : Good P : Poor (needs repair) B : Broken

Table I - 14 Situation of Flood

State : Selangor

Code	Scheme	Flood Damage	Area Affected by Flood Annual (ha)	Once in Several Yrs (ha)	Max Flood (ha)	Max Flood Year
SG001	Sg. Buloh	N				
SG002	Sg. Air Hitam	N				
SG003	Kg. Batu 30	N				
SG004	Kg. Kalong Tengah	N				
SG005	Kuang	N				
SG006	Jalan Enam Kaki	Y		10	10	1987
SG007	Batu 19 3/4	N				
SG008	Kuala Lui	N				
SG009	Sesapan Bt Minangkabau		20		20	1987
SG010	Beranang II	N				
SG011	Bukit Kepong			10		
SG012	Paya Lebar	N				
SG013	Sg. Rinching Hilir	N				
SG014	Kuala Pajam		6			
SG015	Sg. Merab	N				
SG016	Bt. 17, Dusun Tua	N				
SG017	Sg. Panjang	N				

Table I - 15 Situation Existing Farm Roads

State : Selangor

(km)

Code	Scheme	Total Lengths Main	Second.	Tertiary	Total	Length to be Repaired Main	Second.	Tertiary	Total
SG001	Sg. Buloh	0.6	4.2		4.8				
SG002	Sg. Air Hitam								
SG003	Kg. Batu 30	1.4			1.4	0.3			0.3
SG004	Kg. Kalong Tengah	2.3			2.3				
SG005	Kuang	3.0	9.0	14.0	26.0				
SG006	Jalan Enam Kaki								
SG007	Batu 19 3/4								
SG008	Kuala Lui								
SG009	Sesapan Bt Minangkabau	1.6			1.6	1.6			1.6
SG010	Beranang II	0.6			0.6	0.6			0.6
SG011	Bukit Kepong								
SG012	Paya Lebar	1.6			1.6	1.6			1.6
SG013	Sg. Rinching Hilir								
SG014	Kuala Pajam								
SG015	Sg. Merab								
SG016	Bt. 17, Dusun Tua	1.0			1.0				
SG017	Sg. Panjang	12.0	35.0		47.0				

Table I - 16 Construction, Major Rehabilitation and Annual O&M Cost

State : Selangor

(M$)

Code	Scheme	Annual O&M Cost 1983	1984	1985	1986	1987	Investment Cost	Major Rehabilitation Cost
SG001	Sg. Buloh					6,000		23,500
SG002	Sg. Air Hitam						37,844	
SG003	Kg. Batu 30	13,200	13,300	13,400	13,500	13,600		49,000
SG004	Kg. Kalong Tengah	21,200	21,300	21,400	21,500	21,600		115,000
SG005	Kuang	68,400	65,600	70,100	60,400	58,000		
SG006	Jalan Enam Kaki	12,242	13,530	11,760	8,500	22,279		22,279
SG007	Batu 19 3/4	3,960	3,960	3,960	3,960	12,105		
SG008	Kuala Lui	6,860	6,860	6,860	6,860	12,105		
SG009	Sesapan Bt Minangkabau	46,195	66,809	50,108	48,500	61,980		
SG010	Beranang II	4,800						
SG011	Bukit Kepong	9,600		11,400	4,100	22,727		22,727
SG012	Paya Lebar	3,960	3,960	3,960	3,960	5,686		
SG013	Sg. Rinching Hilir	14,400						
SG014	Kuala Pajam	7,302		5,160	3,200	5,760		
SG015	Sg. Merab	3,387	4,985	4,973	3,990	9,997		64,895
SG016	Bt. 17, Dusun Tua	7,820	7,820	7,820	7,820	17,445		
SG017	Sg. Panjang						6,500,000	

Table II - 1 Irrigable Area by Scheme

State : Perlis

(ha)

Code	Scheme	Gross Area	Irrigable Area Main Paddy	Off Paddy
PR001	Ban Seberang Ramai	323	323	
PR002	Ban Bukit Tok Poh	26	25	
PR003	Ban Wang Bintong	246	246	
PR004	Tali Air Bt. Pahat Kanan	38	38	
PR005	Sg. Siran	175	175	175
PR006	Alur Baroh	232	232	
PR007	Pdg. Melangit	260	260	
PR008	Alor Sena	178	169	
PR009	Bukit Tau	94	94	
PR010	Kubang Badak	73	73	
PR011	Kg. Belukar	70	70	
PR012	Kg. Darat/Tok Daboi	405	364	
PR013	Sg. Repoh	272	258	
PR014	Titi Tinggi	162	162	
PR015	Pdg. Siding	400	297	297
PR016	Kok Klang	320	56	56
PR017	Kuala Tunggang	302	146	
PR018	Alor Melaka	209	209	
PR019	Sg. Santan	537	537	
PR020	Pdg. Telela	324	324	
PR021	Kg. Parit	161	161	
PR022	Sg.Siran/Jln.Abi/Kurong Batang	104	104	
	Total	4,911	4,323	528

Table II - 2 Trend of Irrigated Paddy Area by Scheme (1983 - 1987)

State : Perlis

Code	Scheme	Main Season Paddy						Off Season Paddy					
		1983 (ha)	1984 (ha)	1985 (ha)	1986 (ha)	1987 (ha)	Ratio 1987/83	1983 (ha)	1984 (ha)	1985 (ha)	1986 (ha)	1987 (ha)	Ratio 1987/83
PR001	Ban Seberang Ramai	323	323	323	323	323	1.00						**.**
PR002	Ban Bukit Tok Poh	25	25	25	25	25	1.00						**.**
PR003	Ban Wang Bintong	246	246	246	246	246	1.00						**.**
PR004	Tali Air Bt. Pahat Kanan	38	38	38	38	38	1.00						**.**
PR005	Sg. Siran	122	122	122	122	122	1.00						**.**
PR006	Alur Baroh	180	180	180	180	180	1.00						**.**
PR007	Pdg. Melangit	182	182	182	182	182	1.00						**.**
PR008	Alor Sena	169	169	169	169	169	1.00						**.**
PR009	Bukit Tau	87	87	87	90	90	1.03						**.**
PR010	Kubang Badak	66	66	66	66	66	1.00						**.**
PR011	Kg. Belukar	63	63	63	63	63	1.00						**.**
PR012	Kg. Darat/Tok Daboi	364	364	364	364	364	1.00						**.**
PR013	Sg. Repoh	258	258	258	258	258	1.00						**.**
PR014	Titi Tinggi	159	159	159	159	159	1.00						**.**
PR015	Pdg. Siding	297	297	297	297	297	1.00						**.**
PR016	Kok Klang	56	56	56	56	56	1.00						**.**
PR017	Kuala Tunggang	146	146	146	146	146	1.00						**.**
PR018	Alor Melaka	209	209	209	209	209	1.00						**.**
PR019	Sg. Santan	516	516	510	510	510	0.99						**.**
PR020	Pdg. Telela	324	324	324	324	324	1.00						**.**
PR021	Kg. Parit	152	152	153	153	153	1.01						**.**
PR022	Sg.Siran/Jln.Abi/Kurong Batang	104	104	104	104	104	1.00						**.**
	Total	4,086	4,086	4,081	4,084	4,084							

Table II - 4 Trend of Tree Crop Area by Scheme

State : Selangor

(ha)

Code	Scheme	T_Crop83	T_Crop84	T_Crop85	T_Crop86	T_Crop87
SG001	Sg. Buloh	4	5	6	8	8
SG015	Sg. Merab	1	1	1	1	1
SG017	Sg. Panjang	80	80	80	80	80
	Total	85	86	87	89	89

Table II - 6 Trend of Annual Crop Area by Scheme

State : Selangor

(ha)

Code	Scheme	A_Crop83	A_Crop84	A_Crop85	A_Crop86	A_Crop87
SG001	Sg. Buloh	9	11	11	11	10
SG004	Kg. Kalong Tengah					3
SG005	Kuang	20	20	25	30	30
SG013	Sg. Rinching Hilir		4		10	20
SG014	Kuala Pajam			6	6	6
SG015	Sg. Merab				1	1
	Total	29	35	42	58	70

Table II - 8 Trend of Fruit Crop Area by Scheme

State : Selangor

(ha)

Code	Scheme	Fruit83	Fruit84	Fruit85	Fruit86	Fruit87
SG001	Sg. Buloh	7	9	14	14	14
SG003	Kg. Batu 30	4	4	4	4	4
SG004	Kg. Kalong Tengah	2	2	2	2	2
SG005	Kuang		5	10	10	12
SG009	Sesapan Bt Minangkabau			17	38	59
SG011	Bukit Kepong			10	8	8
SG015	Sg. Merab	1	1	1	1	1
	Total	14	21	58	77	100

Table II - 10 Trend of Other Crop Area by Scheme

State : N.Sembilan

(ha)

Code	Schme	1983	1984	1985	1986	1987
NS010	Tanjong Ipoh					1
NS072	Pantai					2
NS085	Kg. Jijan	1	1	1	1	1
NS098	Kg. Machang Hulu					3
NS142	Sg. Dua	1	1	1	1	1
	Total	2	2	2	2	8

Table II - 12 Condition of Mechanized Farming by Scheme

State : Selangor

Code	Scheme	*1 Farm System	Plot Size (ha)	*2 Farm Machinery
SG001	Sg. Buloh		0.6	
SG002	Sg. Air Hitam			
SG003	Kg. Batu 30 J	a	1.0	af
SG004	Kg. Kalong Tengah	a	1.4	af
SG005	Kuang	a	1.0	g
SG006	Jalan Enam Kaki	a	0.5	a
SG007	Batu 19 3/4		0.3	
SG008	Kuala Lui		0.3	
SG009	Sesapan Bt Minangkabau	a	1.5	a
SG010	Beranang II		0.5	
SG011	Bukit Kepong	a	1.3	a
SG012	Paya Lebar		0.3	
SG013	Sg. Rinching Hilir	a	1.2	g
SG014	Kuala Pajam	a	1.5	a
SG015	Sg. Merab	a	1.1	g
SG016	Bt. 17, Dusun Tua		0.3	
SG017	Sg. Panjang	a	1.3	

Remark * 1 a : Individual farmers
b : Farmers unit
c : Groupe farming
d : Farmers association
e : Others

*2 a : Land preparation
b : Transplanting
c : Weeding
d : Spraying
e : Harvesting
f : Transporting
g : No use in any form

Table II - 11 Trend of Unit Yield of Paddy by Scheme

State : Selangor

(ton/ha)

Code	Scheme	1983		1984		1985		1986		1987		Average	
		Main	Off	Main	Off	Main	Off	Main	Off	Main	Off	Main	Off
SG003	Kg. Batu 30	1.6	1.5	1.6	1.5	2.1	2.1	1.9	2.1	2.1	1.9	1.9	1.8
SG004	Kg. Kalong Tengah			0.8	0.8	1.4	1.4	1.6	2.3	1.3	1.8	1.3	1.6
SG005	Kuang	2.0		2.0		2.0						2.0	
SG006	Jalan Enam Kaki	3.0	3.0	3.0		3.0	3.0	3.0		3.0	2.0	3.0	2.7
SG009	Sesapan Bt Minangkabau	3.0		3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0
SG011	Bukit Kepong	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0
SG014	Kuala Pajam	0.7	0.7	0.7		0.7	0.7	0.7		0.1		0.6	0.7

Table II - 15 Farmers Association and Cooperatives by Scheme

State : Selangor

Code	Scheme	Farmers Association		Farmers Cooperatives	
		Existence	No of FarmH	Existence	No of coop.
SG001	Sg. Buloh	N		N	
SG002	Sg. Air Hitam	N		N	
SG003	Kg. Batu 30		39	N	
SG004	Kg. Kalong Tengah		85	N	
SG005	Kuang			N	
SG006	Jalan Enam Kaki				
SG007	Batu 19 3/4				
SG008	Kuala Lui				
SG009	Sesapan Bt Minangkabau		1,874		1,874
SG010	Beranang II		20		20
SG011	Bukit Kepong				
SG012	Paya Lebar				
SG013	Sg. Rinching Hilir	N		N	
SG014	Kuala Pajam	N			
SG015	Sg. Merab	N			60
SG016	Bt. 17, Dusun Tua				
SG017	Sg. Panjang				

IN NON-GRANARY PRODUCED AREAS IN MALAYSIA

JICA