THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

THE MASTER PLAN SURVEY REPORT ON THE IRRAWADDY BASIN INTEGRATED AGRICULTURAL DEVELOPMENT

ANNEX A

GENERAL INFORMATION

MARCH 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

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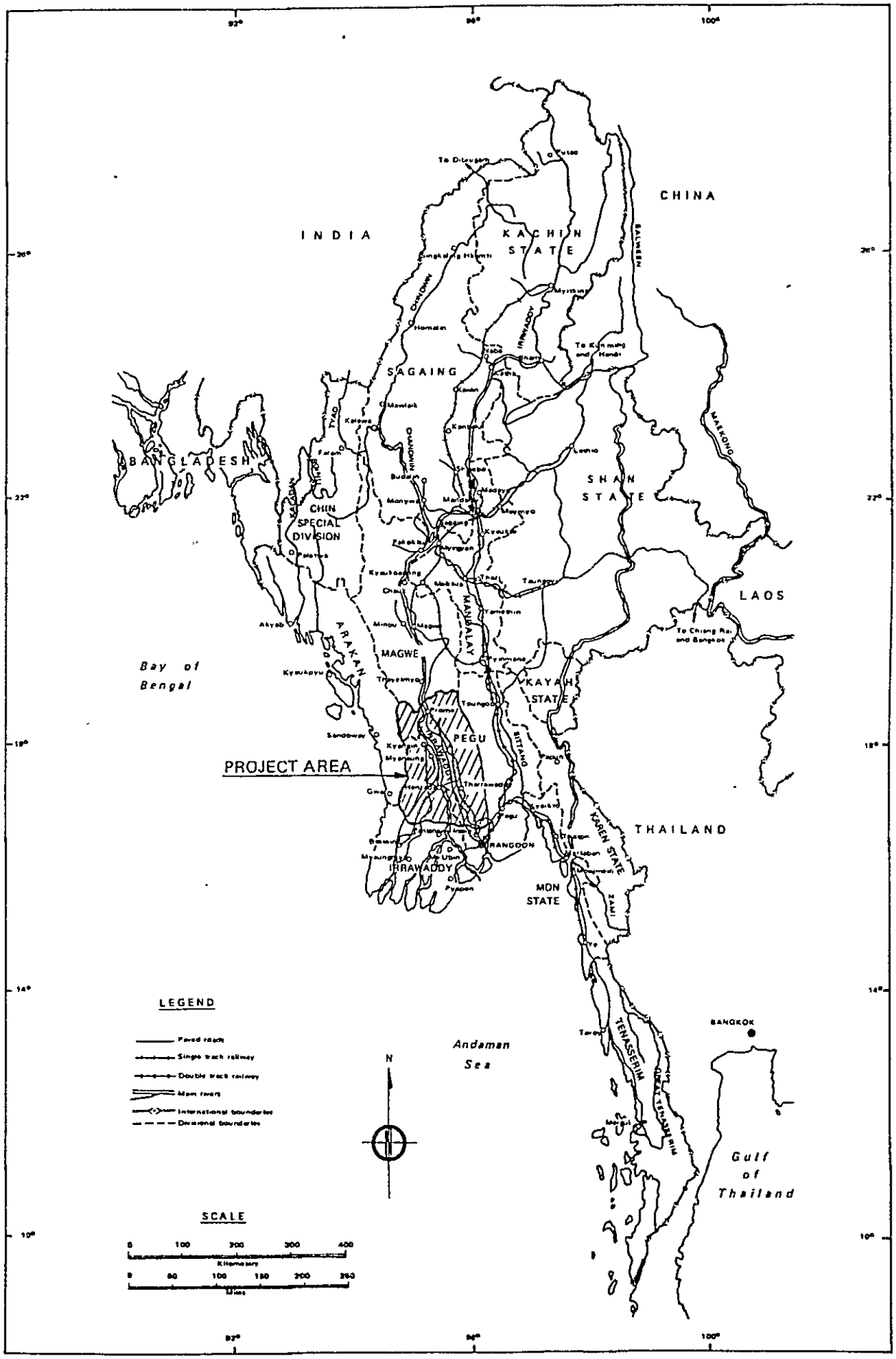
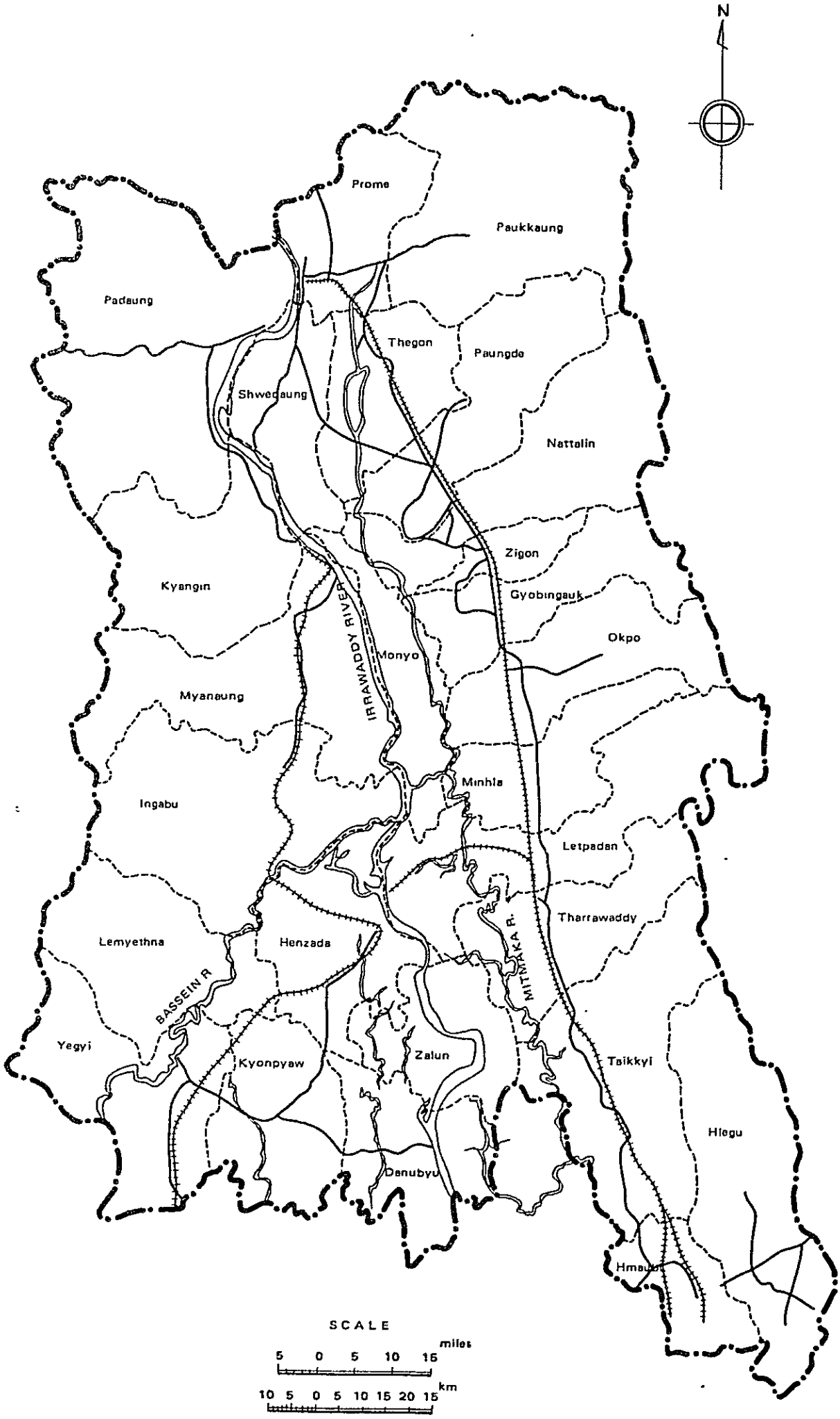

INDIA
CHINA
KACHIN STATE
SAGAING
BANGLADESH
CHIN SPECIAL DIVISION
SHAN STATE
LAOS
MAGWE
KAYAH STATE
PEGU
PROJECT AREA
THAILAND
YAREN STATE
RANGOON
IRRAWADDY
MON STATE
TENASSERIM
BANGKOK
Bay of Bengal
Andaman Sea
Gulf of Thailand
ARAKAN
MANDALAY
SITTANG
SALWEEN
MEKONG
CHINDWIN
IRRAWADDY
To Kunming and Hanoi
To Chiang Rai and Bangkok
LEGEND
Paved roads
Single track railway
Double track railway
Main rivers
International boundaries
Divisional boundaries
N
SCALE
Kilometers
Miles


N
Prome
Paukkaung
Padaung
Thegon
Paungde
Shwegaung
Nattalin
Zigon
Kyangin
Gyobingauk
IRRAWADDY RIVER
Okpo
Monyo
Myanaung
Minhla
Ingabu
Letpadan
Tharrawaddy
MITHKA R.
Lemyethna
Henzada
BASSEIN R
Yegyi
Kyonpyaw
Zalun
Taikkyi
Hlegu
Danubyu
Hmawbi
SCALE
miles
5 0 5 10 15
km
10 5 0 5 10 15 20 15

CONTENTS

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ABBREVIATION, MEASURES AND GLOSSARIES

AC	Agriculture Corporation
ADB	Asian Development Bank
AE	Assistant Engineer
AGM	Assistant General Manager
AFPTC	Agricultural and Farm Produce Trade Corporation
AMD	Agricultural Mechanization Department
APS	Advance Purchase System
Ave	Average
BAG	Bachelor of Agricultural University
BKT	Basket(s)
CIF	Cost Insurance and Freight
°C	Degree Centigrade
DAGM	Deputy Assistant General Manager
DG	Director General
DGM	Deputy General Manager
Dy	Deputy
EE	Executive Engineer
EL	Elevation
EPC	Electric Power Corporation
FC	Foreign Currency
FiD	Fishery Department
FERD	Foreign Economic Relations Department
FIC	Foodstuff Industries Corporation
FOB	Free on Board
FoD	Forest Department
F/S	Feasibility Study
FY	Fiscal Year from April to March
GM	General Manager
GNP	Gross National Product
GWH	Giga Watt Hour
HP	Horsepower

HWL	High Water Level
HYV	High Yielding Variety (of paddy)
Hz	Hertz per second
IBRD	International Bank for Reconstruction and Development
ID	Irrigation Department
IDA	International Development Association
KV	Kilo Volt
KW	Kilo Watt
KWH	Kilo Watt Hour
LC	Local Currency
LDMC	Livestock Development and Marketing Corporation
LIV	Local Improved Variety
LWL	Lower Water Level
LV	Local Variety
MAF	Ministry of Agriculture and Forests
MD	Managing Director
MHD	Meteorological and Hydrological Department
MI 1	Ministry of Industry No. 1
M/P	Master Plan
MPF	Ministry of Planning and Finance
MT	Ministry of Trade
MW	Mega Watt
MWL	Mean Water Level
PD	Project Director
pH	Potential of Hydrogen
PPFC	People's Pearl and Fishery Corporation, MAF
PPM	Part(s) per Million
%	Percent
PSD	Planning and Statistics Department
SD	Survey Department, MAF
SLRD	Settlements and Land Records Department, MAF
TC	Timber Corporation, MAF
TEM	Township Extension Manager
TSP	Triple Super Phosphate

UCC	University Computer Center
UGCF	Union Government Consolidated Fund
VAHD	Veterinary and Animal Husbandry Department
VTB	Village Tract Banks
WPSD	Working People's Settlement Department

MEASURES

Length

mm	millimeter (s)
cm	centimeter (s)
m	meter (s)
km	kilometer (s)
inch	25.4 mm
ft	foot (feet) = 12 inch = 30.48 cm
mile	5,280 feet = 1.609 km

Area

sq.cm	square centimeter (s)
sq.m	square meter (s)
sq.km	square kilometer (s) = 100 ha
ac	acre (s) = 4,047 sq.m
sq.mile	square mile = 2.59 sq.km = 640 ac
ha	hectare

Capacity

ℓ	litter
cu.m	cubic meter
MCM	Million Cubic Meter
cu.ft	cubic foot (feet) = 28.32 ℓ
cu.yd	cubic yard = 0.765 cu.m
AF	Acre Foot (feet) = 1,233.48 cu.m
Qt	Quart = 1/4 gl = 1.136 ℓ (UK) = 0.946 ℓ (US)
gl	gallon = 4.543 ℓ (UK) = 3.785 ℓ (US)

Note: UK: British Measure
US: US Measure

Weight

g	gram (s)
kg	kilogram (s)
ton	metric ton
oz	ounce = 28.4 g
lb	Pound = 16 oz = 0.454 kg

Others

cm/sec	centimeter per second
m/sec	meter per second
km/sec	kilometer per second
mile /hr	mile per hour= 1.609 km/hr = 0.447 m/sec
ft/second	feet per second
cu.m/sec	cubic meter per second
cfs/cu.sec	cubic foot (feet) per second = 0.0283 cu.m/sec
gl/sec	gallon per second = 4.543 ℓ/sec = 0.0757 ℓ/min

Glossaries

lakh	100,000
crore	10,000,000
viss	1.633 kg
Pyi	2,127 kg
basket	20.9 kg (paddy)
basket	34.0 kg (rice)
bag	75.6 kg (rice)
Chaung	River or Stream
Kyat	Unit of Local Currency (about 30 Japanese Yen)
In	Lake or Swamp area
Yoma	Mountain range
1 US$	6.44 kyats

I. BACKGROUND OF THE SURVEY

I.1. History of the Survey (See Appendix A-1, Page 1)

(1) Preliminary Survey
- (A) Objective of Survey
- (B) Member of the Survey Team
- (C) Itinerary of the Survey Team

(2) First Stage Survey
- (A) Scope of Works
- (B) Member of the Survey Team
- (C) Itinerary of the Survey Team

(3) Second Stage Survey
- (A) Scope of Works
- (B) Member of the Survey Team
- (C) Member of Counterpart
- (D) Itinerary of the Survey Team

(4) Third Stage Survey
- (A) Survey Items
- (B) Member of the Survey Team
- (C) Member of Colombo Plan Experts
- (D) Member of Counterparts
- (E) Itinerary of the Survey Team

I.2. Contents of the Survey (See Appendix A-1, Page 19)

(1) Second Stage Survey
- (A) Scope of Works
- (B) Plan of Operation

(2) Third Stage Survey
- (A) Plan of Operation

II. PRINCIPAL COMPONENT ANALYSIS

II.1. Objective

The Study Area covers so vast area of about 7.1 million acres consisting of administratively 26 townships of the three Divisions, Pegu, Irrawaddy and Rangoon. From viewpoints of demography, topography, climate, soil, land use, social infrastructures and so on, the Study Area may have some regional characteristics.

For the purpose of being a help to the sub-regional grouping of the Study Area, a principal component analysis has been made on the basis of existing available data.

II.2. Data Arrangement

The data applied in the analysis are population, annual rainfall, effective rainfall during September and October, township area, cultivated area, forest area, paddy production, paddy yield, cultivable waste land, capacities of paddy/rice shorages as well as rice mills, draft animals, and upland crop production, which are available on township basis in 1976/77 except the rainfall data.

Though there are 19 townships in which rainfall data are available, there exist so many cases of lack of data, namely 20 townships have no data in 1976/77. These lack of data are arbitrarily supplemented by estimating on the basis of available rainfall data.

II.3. Analysis

By establishing four types of model which are given in Table II-1, the principal component analysis has been executed through utilization of a package computer programme (BMD) prepared by Dendenkosha Multi-Access Online System (DEMOS). As compiled in Appendix A-2 of this Annex A, the analysis on every four models does not specify any definite explanatory result for the sub-regional grouping.

TABLE II-1 MODEL BUILDING

Variable No.	Model No.1	Model No.2	Model No.3	Model No.4
1	Population	Population	Population	Population
2	Annual Rainfall	Annual Rainfall	Annual Rainfall	Annual Rainfall
3.	Township Area	Township Area	Township Area	Effective Rainfall 5/
4	Cultivated Area	Cultivated Area	Cultivated Area Ratio 3/	Paddy Field Ratio 1/
5	Forest Area	Forest Area	Forest Area Ratio 4/	Upland Field Ratio 2/
6	Paddy Field Ratio 1/	Paddy Field Ratio 1/	Paddy Field Ratio 1/	Paddy Production
7	Upland Field Ratio 2/	Upland Field Ratio 2/	Upland Field Ratio 2/	Paddy Yield
8	Paddy Production	Paddy Production	Paddy Production	Cultivable Waste
9	Paddy Yield	Paddy Yield	Paddy Yield	Draft Animal
10	Cultivable Waste	Cultivable Waste	Cultivable Waste	Upland Crop Product
11	Paddy Storage	Draft Animal	Draft Animal	Paddy Storage
12	Rice Mill	Upland Crop Product	Upland Crop Product	Rice Mill

Note: 1/ Paddy Field/Cultivated Area, 2/ Upland Field/Cultivated Area,
3/ Cultivated Area/Township Area, 4/ Forest Area/Township Area,
5/ Effective Rainfall in September and October.

III. DYNAMIC SIMULATION

III.1. Concept of System Dynamics

The basic purpose of System Dynamics (SD) is to observe and understand the dynamic behavior of a specific system, regardless of the optimum solution, by clarifying the structural components using relevant information. SD is suitable for building a model of a system with limited applicable information as it is dependent not on parameters but on the structure itself. As long as the resulting model behaves within an acceptable range, the builder does not have to establish a positive proof, and a negative proof would be constructed only by those who disagree.

SD is generally classified into three forms as follows:

1) Computer systems
2) Social systems
3) Studies systems

The building of a system model must satisfy four conditions as follows:

1) The objectives must be established.
2) Elements and components which explain the model effectively must be determined.
3) The roles of the elements and components must be decided.
4) The procedures of dynamic simulation must be set up.

Examples of cases where these conditions are satisfied for each of the forms of SD mentioned above are the objectives of designing a computer system, determining the needs of a social system, and clearly identifying a problem. In the case of a studies system, it must first be clarified what is to be studied and this is an objective in itself. Since the objectives are defined, which is the first condition, the other three conditions would be decided successively. When a problem is to be solved by application of SD, it is

very important to observe the real system carefully. A suitable method is to distinguish and observe the system structure in several stages.

III.2. Flow Diagram

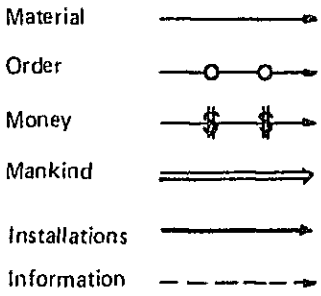
The system models presented in this report are those of two policies for rice production and animal husbandry in Burma. Flow diagrams are used to represent the static structure of the system models and the course of their dynamic behavior. Generally any social system contains a complicated network of information. The best approach is to draw a flow diagram of the system model so that every component within the complicated feedback system can be easily and clearly understood. Figure III-1 explains the symbols used. Flow diagrams of the systems for rice production and animal husbandry are shown in Figures III-2 and III-3.

III.3. DYNAMO Equations

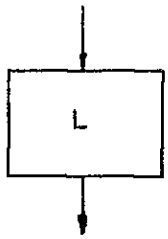
After the flow diagram is drawn, DYNAMO (DYNAmic MOdel) equations must be defined in accordance with the flow. The following points must be observed in defining DYNAMO equations:

1) The left and right sides of an equation must have the same dimension.
2) Time indications on the left and right sides of an equation must comply with the grammar of the DYNAMO Language.
3) The values of parameters in the program must be explainable in relation to the concrete elements in a real system.
4) The variable necessary for initialization must take initial values which are found in a real system.
5) The significant unit time and duration of the dynamic simulation must be determined according to the characteristics of the system.
6) Prior to mobilization of the model simulation, the output forms for all Level variables should be well-designed and specified so as to grasp their behavior.

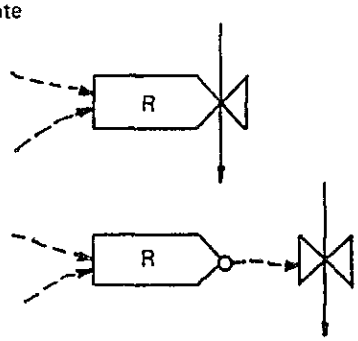
1) Flow



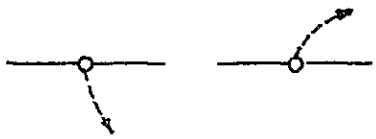
2) Level



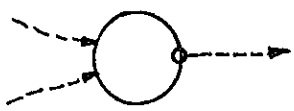
3) Rate



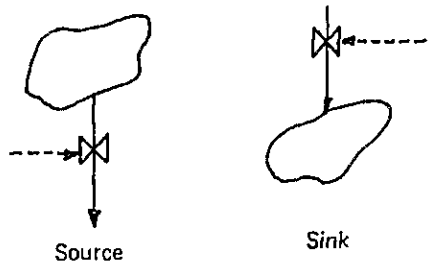
4) Parameter



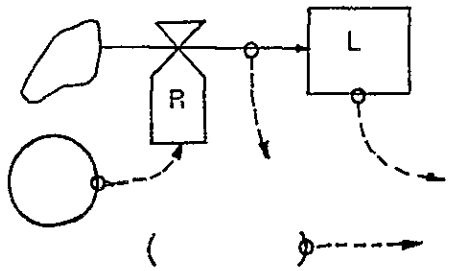
5) Auxiliary



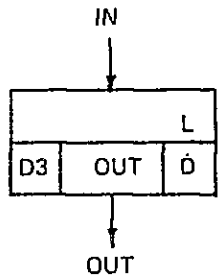
6) Source and Sink



7) Taking out the Information



8) Exponential Delay



9) Boxcar Train

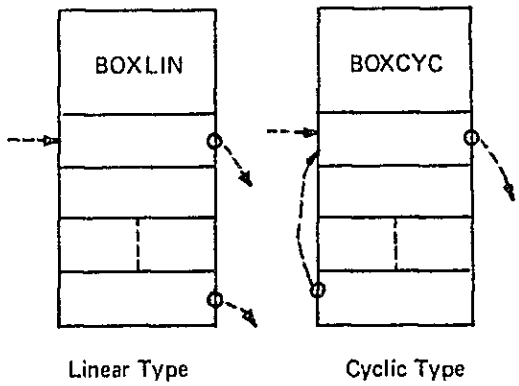


FIGURE III-1 SYMBOL OF FLOW DIAGRAM USED FOR SYSTEM DYNAMICS

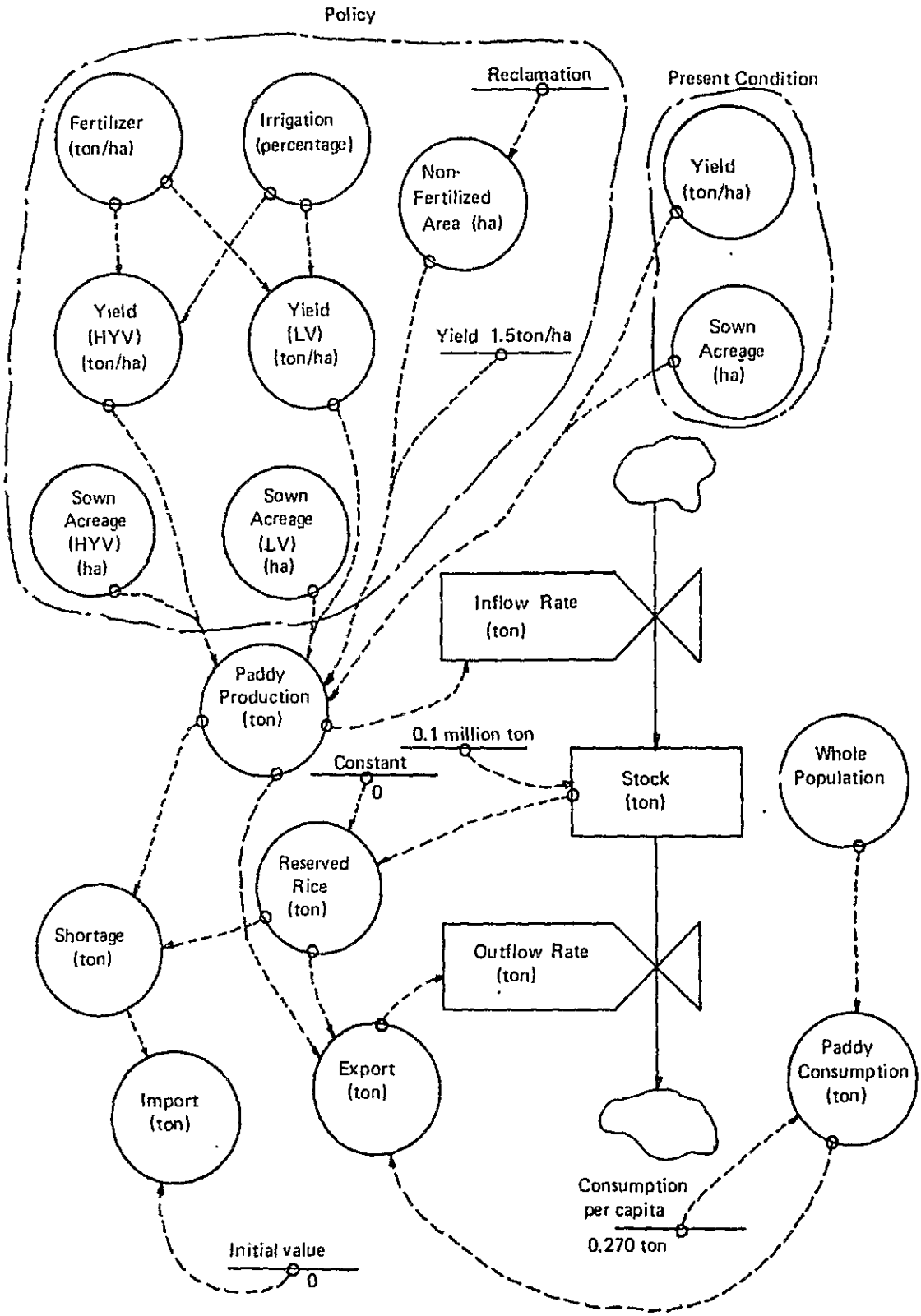


FIGURE III-2 FLOW DIAGRAM OF PADDY PRODUCTION SYSTEM

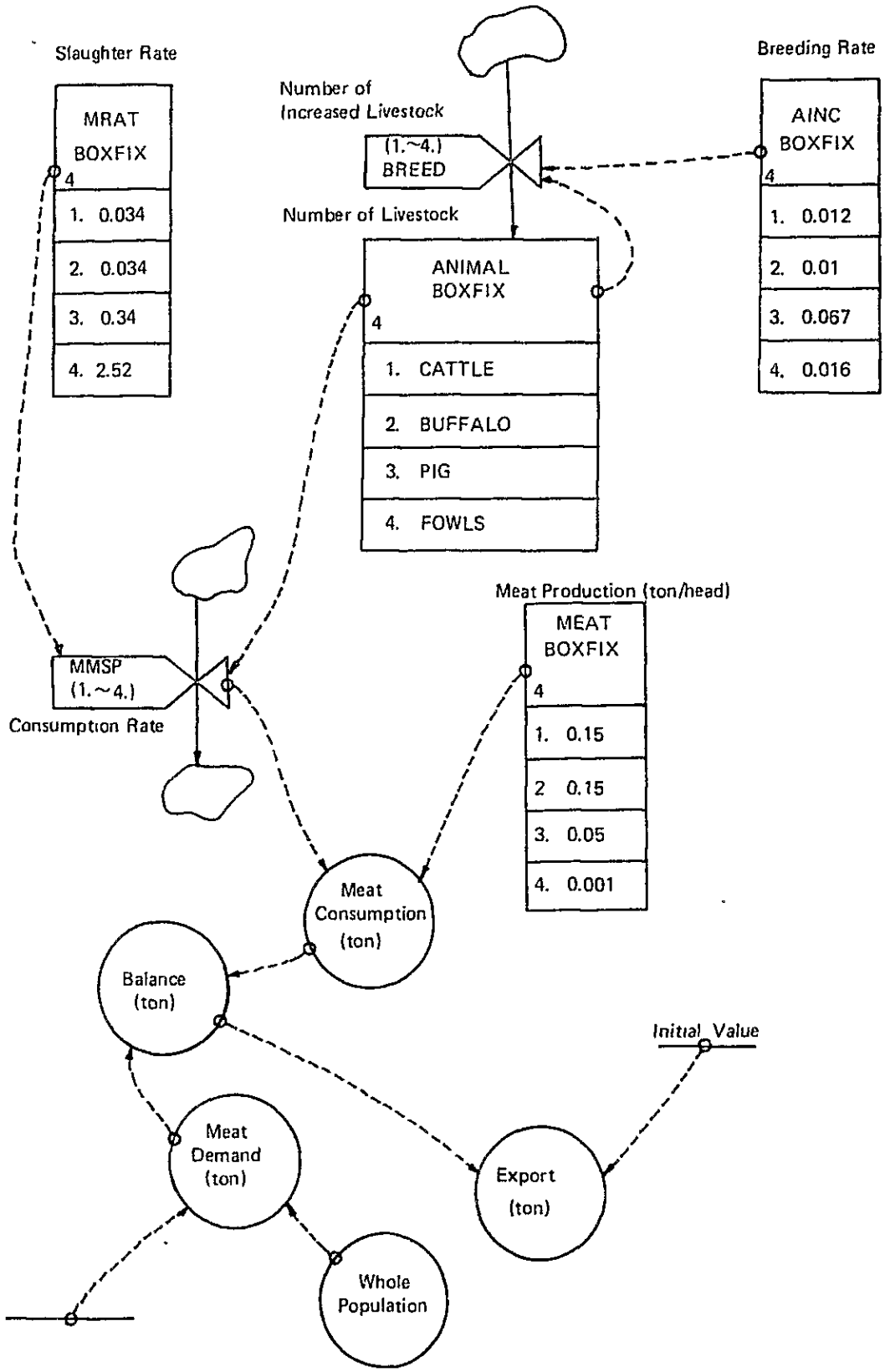


FIGURE III-3 FLOW DIAGRAM OF ANIMAL HUSBANDRY SYSTEM

Seven types of system variables are used to compose DYNAMO equations:

1) L Level
2) A Auxiliary
3) R Rate
4) C Constant
5) N Initial Value
6) B Boxcar Train
7) S Supplementary

In addition to the above, CP, T, TP and SPEC variables are also used. The functions of these variables are as follows:

1) Level:

This variable is calculated from a past Level variable and Rate variable as in the following equation.

```
L   STOCK·K = STOCK·J + DT.(INP·JK - OUT·JK)
```

2) Auxialiary:

This variable is needed to simplify each DYNAMO equation when the Level or Rate equation is long and complicated.

3) Rate:

This variable presents the rate of variation of any element per unit time (DT).

4) Constant:

This variable keeps a constant value during one simulation run.

5) Initial Value:

Some Level, Rate and Auxiliary variables must be initialized by certain values. Initial value variables are used to define such initial values.

6) Boxcar Train:

A group of variables which behave as if they are housed in each boxcar of a train and transferred to the next boxcar at each interval of unit time, so that DYNAMO equations can be simplified and computer processing time reduced.

7) Supplementary:

This variable is used to simplify output variables while remaining independent from other DYNAMO equations.

III.4. System Investigation

Figures III-4 to III-6 show the statistical data for agriculture from 1973 to 1978 which were used in carrying out system observation. The purpose of simulation in this case is to find out the optimum policy for increasing the yield of rice production and animal husbandry. From these charts statistical data for five years can be seen to show a linear trend of increase. The following processes are then applied to each component of the system model to find interrelationships.

Mathematical Formulation of System Components is described as follows;

(1) Linear Processing

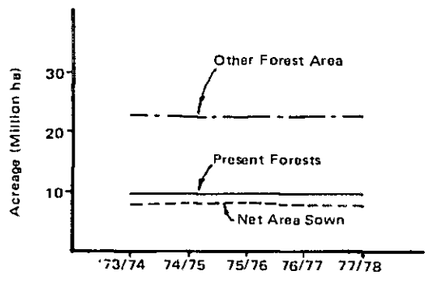
Linear growth occurs when the amount of increase in a certain period of time is always constant. The components of agricultural production judged to show linear growth are as follows:

a) Sown paddy acreage
b) Yield
c) Paddy production

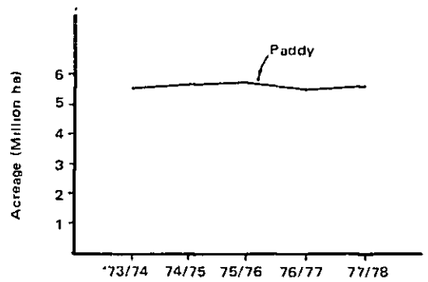
(2) Geometric-Series Processing

Geometric-series growth occurs when the ratio of increase in a certain period of time is always constant. The following components

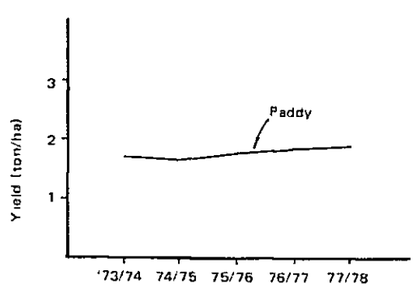
(1) Land Utilization



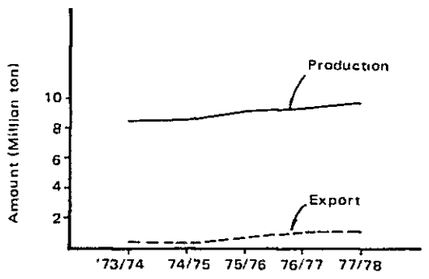
(2) Sown Acreage



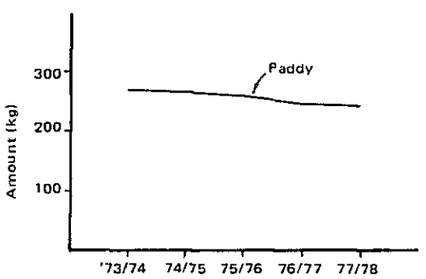
(3) Yield (Paddy)



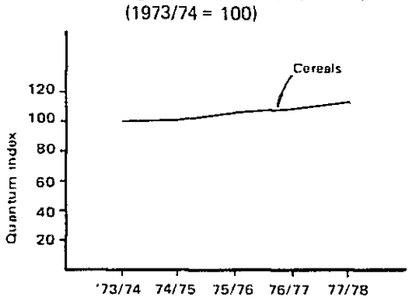
(4) Production and Export (Paddy)



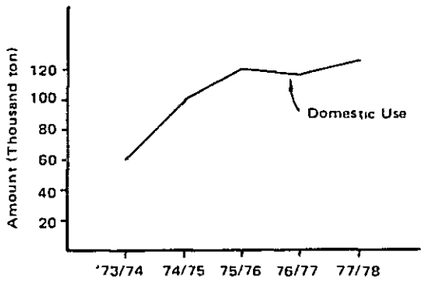
(5) Consumption (Paddy)



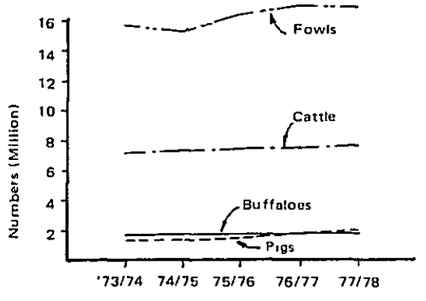
(6) Progress of Production (Cereals)
(1973/74 = 100)



(7) Fertilizer



(8) Livestock Breeding



(9) Draught Cattle

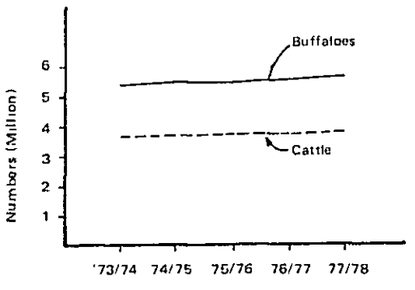
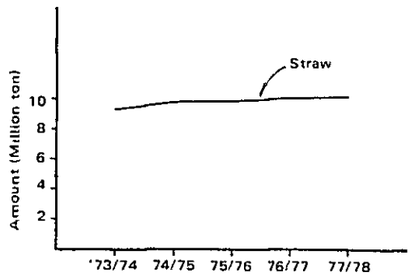
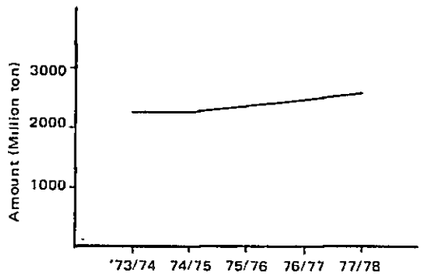


FIGURE III-4 AGRICULTURAL STATISTICS IN BURMA

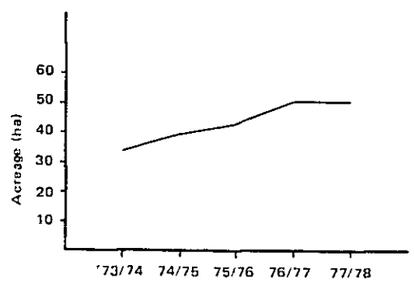
(10) Animal Feed



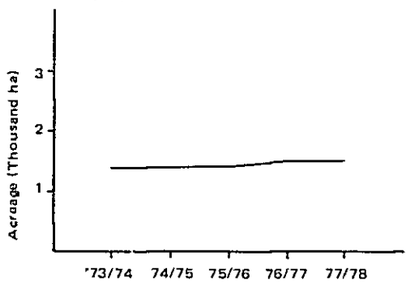
(11) Fish Products



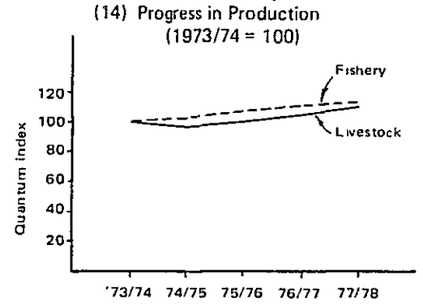
(12) Hatcheries



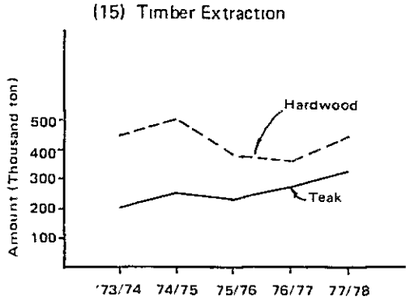
(13) Area of Fish Pond



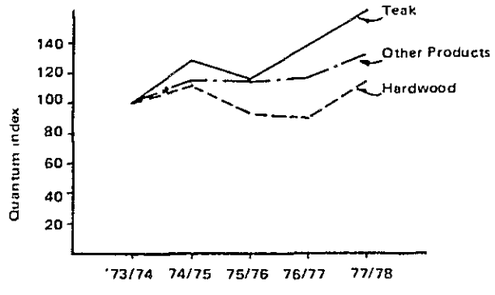
(14) Progress in Production
(1973/74 = 100)



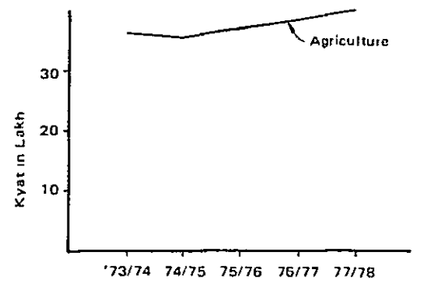
(15) Timber Extraction



(16) Progress of Production
(1973/74 = 100)



(17) Value of Production of Goods



(18) Value of Production of Goods

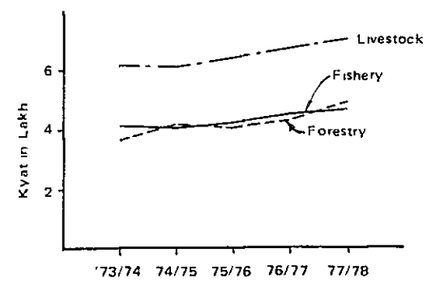
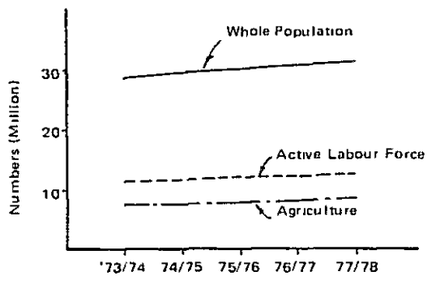
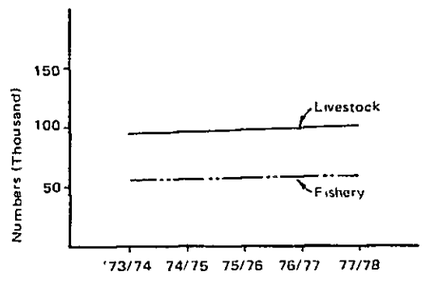


FIGURE III-5 AGRICULTURAL STATISTICS IN BURMA

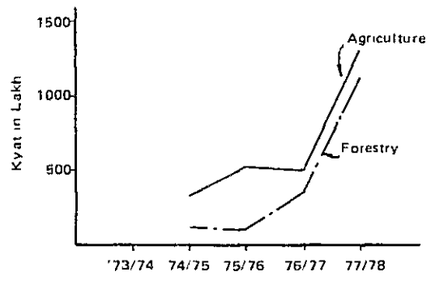
(19) Population (1)



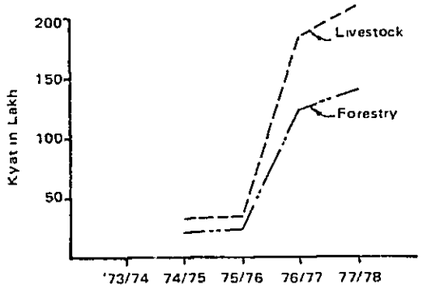
(20) Population (2)



(21) Public Investment
(Unit: 1969/70 constant price)



(22) Public Investment
(Unit: 1969/70 Constant price)



(23) Tractor

FIGURE III-6 AGRICULTURAL STATISTICS ON BURMA

fall into this category:

a) Total production
b) Draft cattle breeding

(3) Others

In general the least squares method is widely used for formulation of components excluded from the above categories. However, for statistical data from a short period such as 5 years, the following mathemetical methods are applied:

a) Such components are expressed arithmetically, with theoretical justification, by addition of the combinations of certain defined components and ratios.
b) The arithmetic equations are tested against the statistical data and correction coefficients are introduced to reduce the errors between the simulated and statistical data to within a range of 5 - 10%.

III.5. Model Building

III.5.1 Rice Production Policy

According to the statistical data for the past five years, rice production in Burma exceeds the domestic consumption. Exports of surplus rice have been increasing, reaching about one million tons in 1977/78. In view of the geometrical population increase, however, at the present rates of rice consumption per capita and domestic production a supply shortfall will develop before long. In the model system, the factors controlling rice production policy -- rice production, domestic consumption, stocks, imports, and exports -- are related by a feedback loop. To obtain rice production the impacts of fertilizer use, irrigation facilities and land reclamation are mathemetically combined. The following are the equations for rice production policy.

(1) Rice export policy

(a) When rice production is less than or equal to domestic rice consumption, export is equal to zero.

(b) When rice production is greater than rice consumption and the reserved rice stock is less than or equal to "0.25 x rice consumption", export is equal to "0.5 x rice production - rice consumption".

(c) When rice production is greater than rice consumption and the reserved rice stock is greater than "0.25 x rice consumption", export is equal to "reserved rice stock - 0.25 x rice consumption - rice production - $(1+\alpha)$ x rice consumption", where $\alpha = 0.022$; (α is the population growth rate).

(2) Rice import policy

(a) When rice production is greater than or equal to rice consumption, import is equal to zero.

(b) When rice production is less than rice consumption and the reserved rice stock exceeds the production shortfall, "where the production shortfall is equal to rice consumption - rice production", import is equal to zero.

(c) When rice production is less than rice consumption and the reserved rice stock is less than the production shortfall, import is equal to "production shortfall - reserved rice stock", where the reserved rice stock is greater than or equal to zero.

(3) Reserved rice stock

(a) The reserved rice stock held over to the following year is equal to "reserved rice stock in the current year + inflow rate - outflow rate", where inflow rate is equal to rice production and outflow rate is equal to "rice consumption + export".

(4) Paddy fertilization policy

(a) Fertilization policy (1) ..... (F1)

Fertilizer application per hectare remains at the present levels:

For high-yielding varieties: 100.61 kg/ha

For local varieties: 10.06 kg/ha

(b) Fertilization policy (2) ..... (F2)

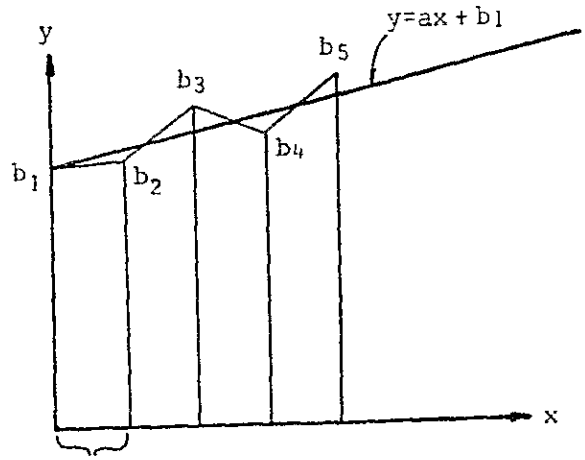
Fertilizer application is increased by 45 kg/ha/year from the sixth year to a maximum of 201 kg/ha.

For high yielding varieties: 100.61 + 45 x no. of years (kg/ha)

For local varieties: 10.06 + 45 x no. of years (Kg/ha)

(5) Reclamation policy (1) ..... (L1)

In the past 5 years, the sown acreage has changed from simbol b1 to b5 in following figure.



Assuming that:

$$\int_0^4 y\,dx = \frac{1}{2}(b_1 + b_2) + \frac{1}{2}(b_2 + b_3) + \frac{1}{2}(b_3 + b_4) + \frac{1}{2}(b_4 + b_5) \qquad (5\text{-}1)$$

then,

$$\int_0^4 (ax + b_1)\,dx = \left[\frac{1}{2}ax^2 + b_1 x\right]_0^4 = 8a + 4b_1$$

$$= (b_1 + b_2 + b_3 + b_4 + b_5) - \frac{1}{2}(b_1 + b_5) \qquad (5\text{-}2)$$

Arranging and simplifying Eq. 5-2

$$\gamma = [(b_1 + b_2 + b_3 + b_4 + b_5) - 4.5\,b_1 - 0.5\,b_5]/8 \qquad (5\text{-}3)$$

Hence, Eq 5-3 represents the average annual increase rate of reclamation area.

(6) Fertilized area expansion policy 1 ..... (A1)

As the fertilized area has increased linearly over the past 5 years, the annual rate of expansion expressed by Eq. 5-3.

(7) Irrigation policy (1) ..... (I1)

Fertilized areas are to be totally irrigated within five years after the seventh year.

N.B. 1) The ratio of irrigated production to non-irrigated production is 1 : 0.8 for high-yield varieties and 1 : 0.85 for local varieties.

2) Twenty percent of the irrigated area is utilized for the second crop.

III.6 Model Simulation

III.6.1 Rice Production Policy

Model simulation studies have been conducted for eight cases/policies as shown in Table III-1. To maintain a stable level of domestic consumption and expand exports, the following policy (case 8) was found suitable.

1) The acreage of fertilizer application should be increased

in accordance with the present policy, and the amounts of fertilizer applied should be maintained at present levels.

2) Irrigation facilities should be introduced and/or completed without delay in areas of fertilizer application; in the study, a period of five years for completion of the facilities was assumed.

3) Land reclamation should be continued at the present rate. The case study have been made until such policy is suitable and the results of simulation are shown in Figures III-7 to III-14.

TABLE III-1 POLICY AND CASE STUDY

Case	Current[1/] Fertilizer	Increase			
		Fertilizer	Area[2/]	Irrigation	Reclamation
1	X				
2		X			
3		X		X	
4	X				X
5		X			X
6		X		X	X
7	X		X		X
8	X		X	X	X

Remarks: 1/ Continue current amount of fertilizer application

2/ Fertilizer application area includes reclamation area

III.6.2. Animal Husbandry Policy

Since statistical data collected for animal husbandry in Burma to establish the future policy are limited, this simulation is taken into account the present condition (Figure III-15).

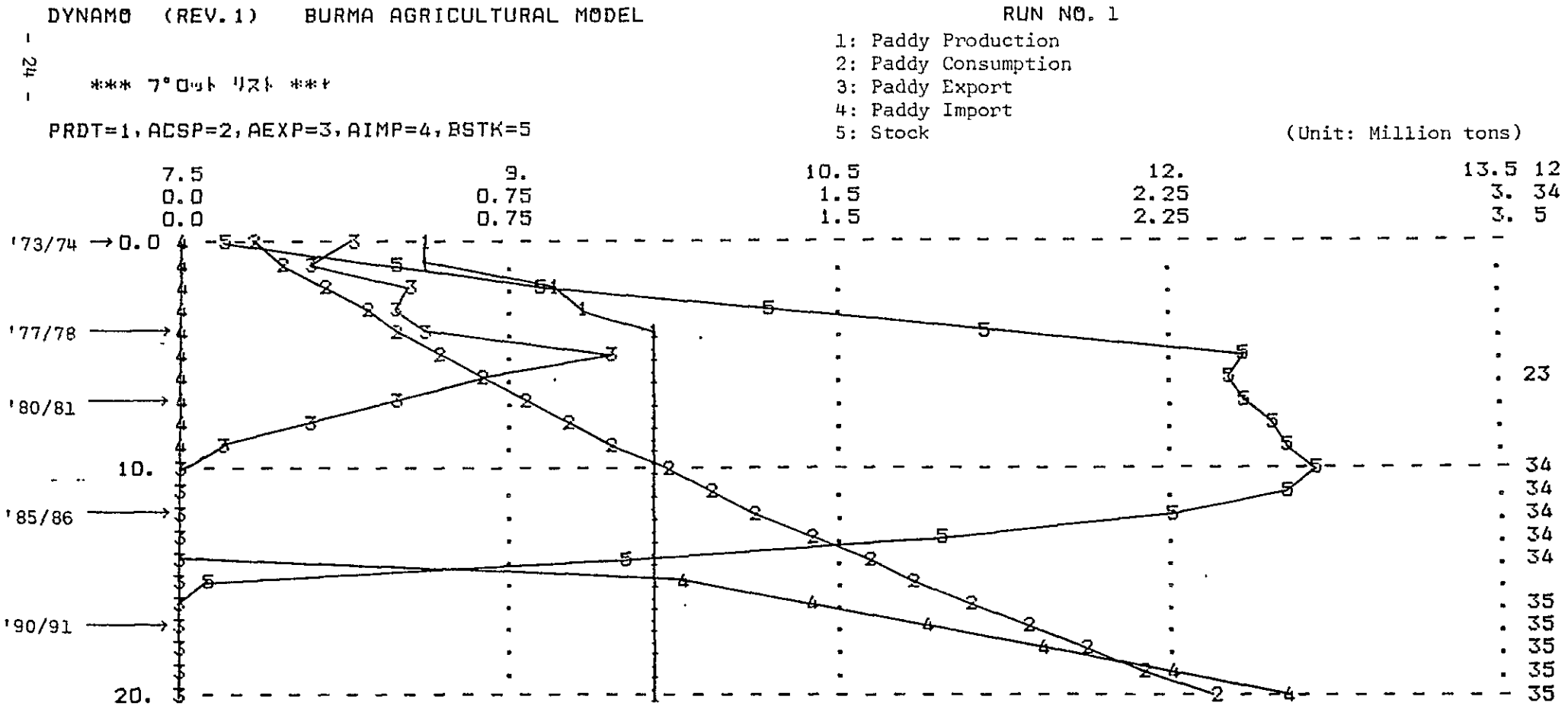


FIGURE III-7 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

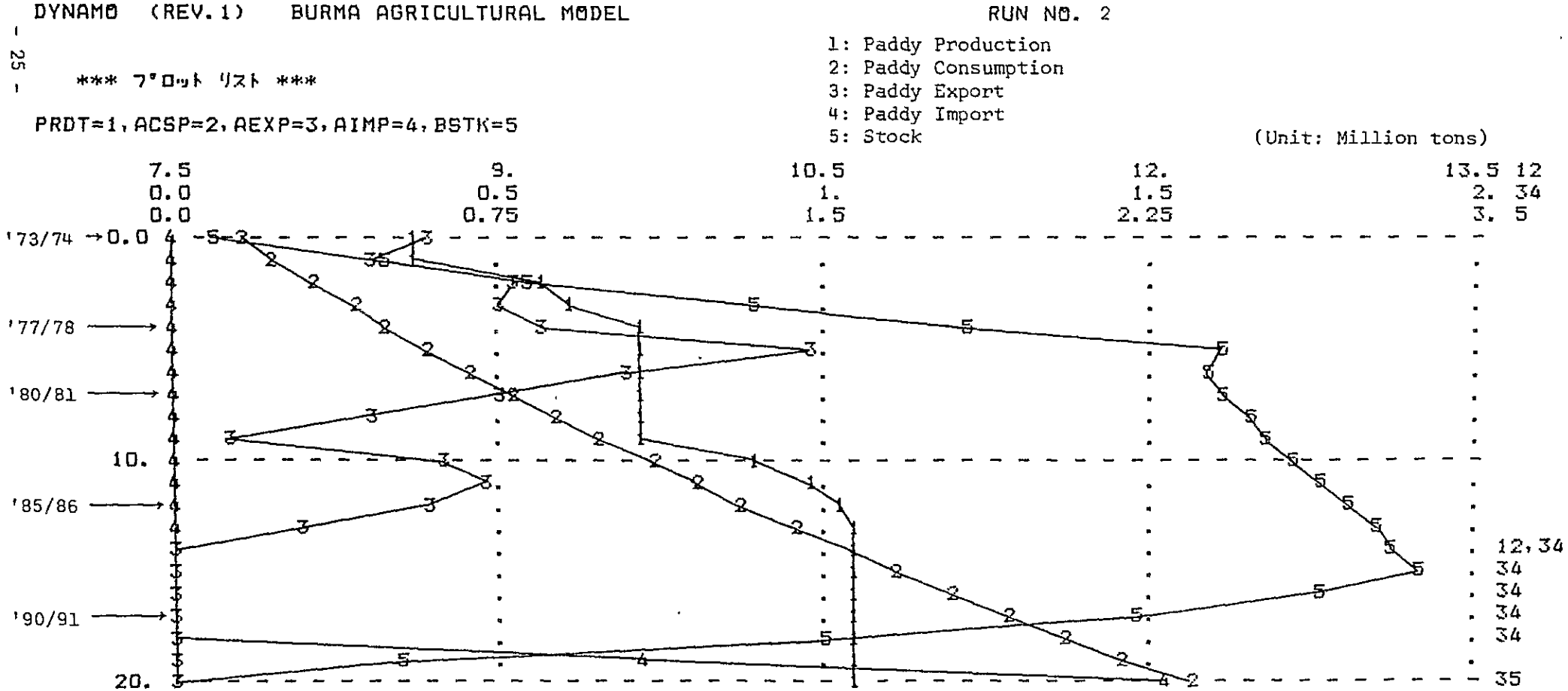


FIGURE III-8 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

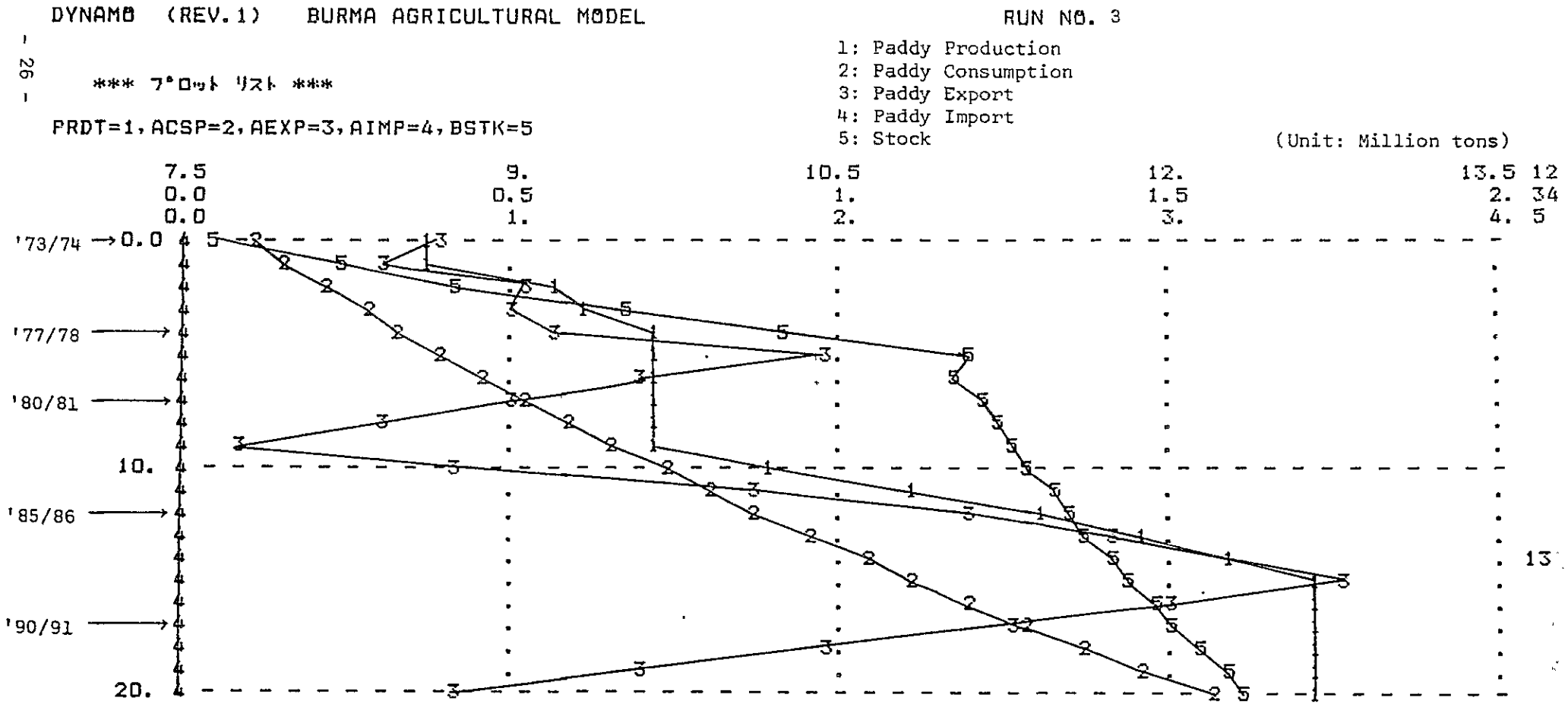


FIGURE III-9 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

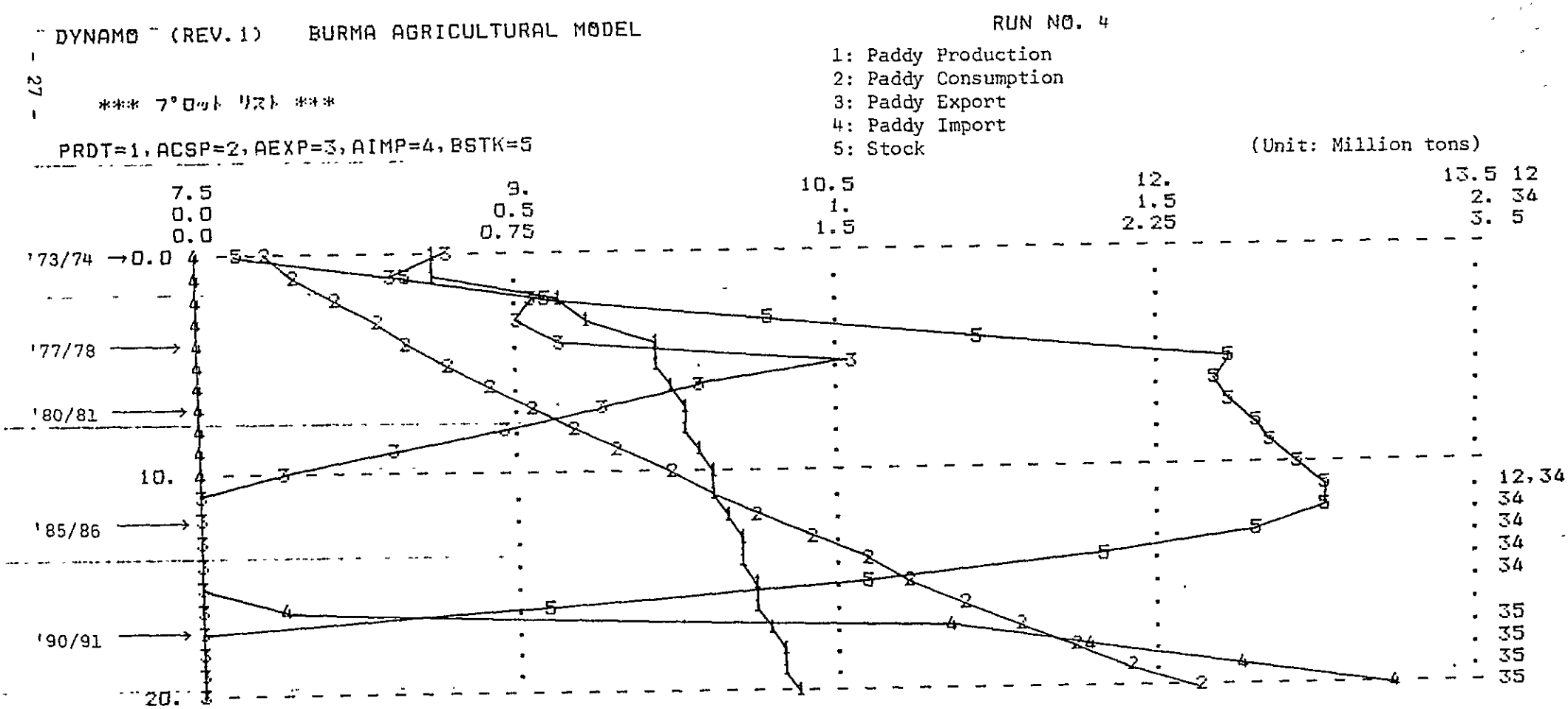


FIGURE III-10 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

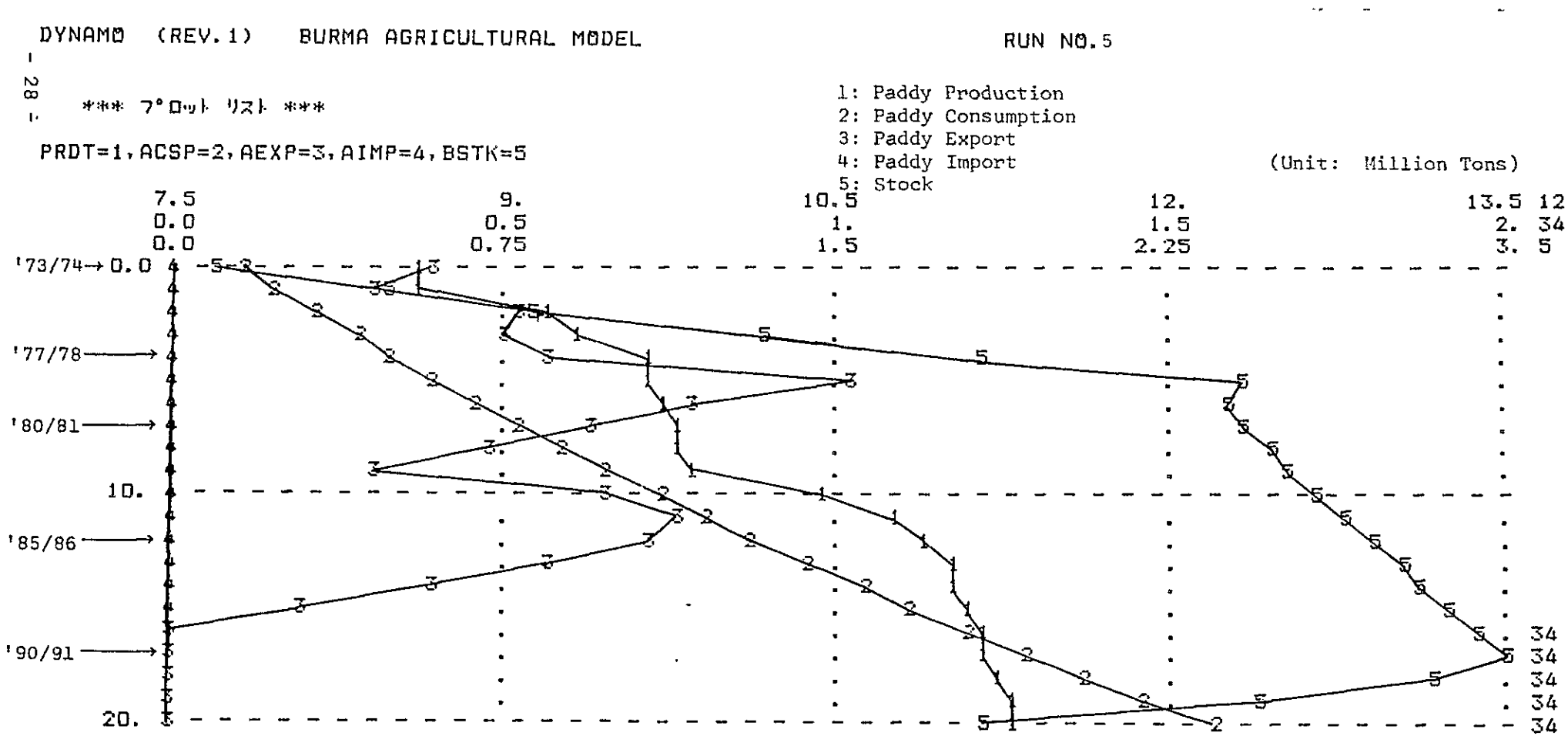


FIGURE III-11 DYNAMIC SIMULATION OF PADDY PRODUCTION AND BALANCE

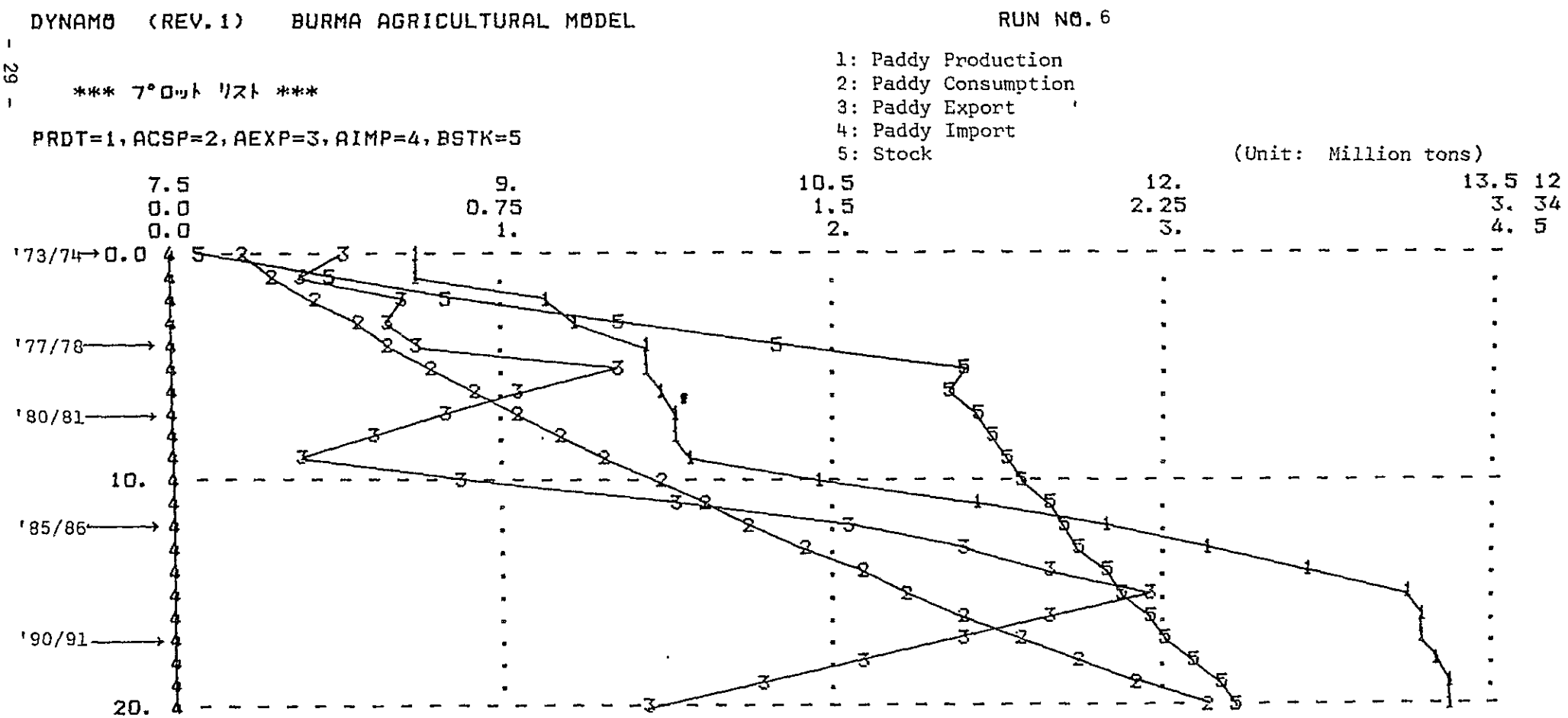


FIGURE III-12 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

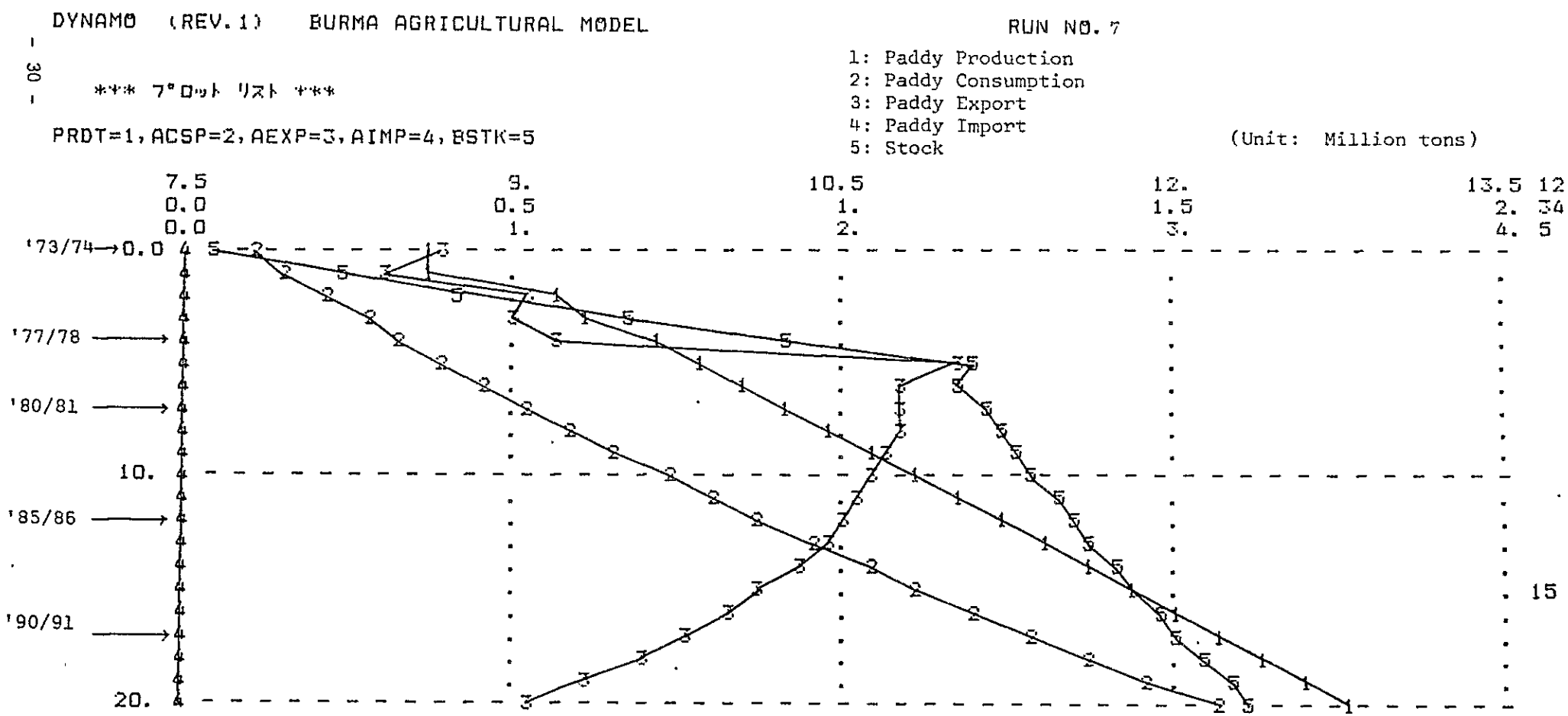


FIGURE III-13 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

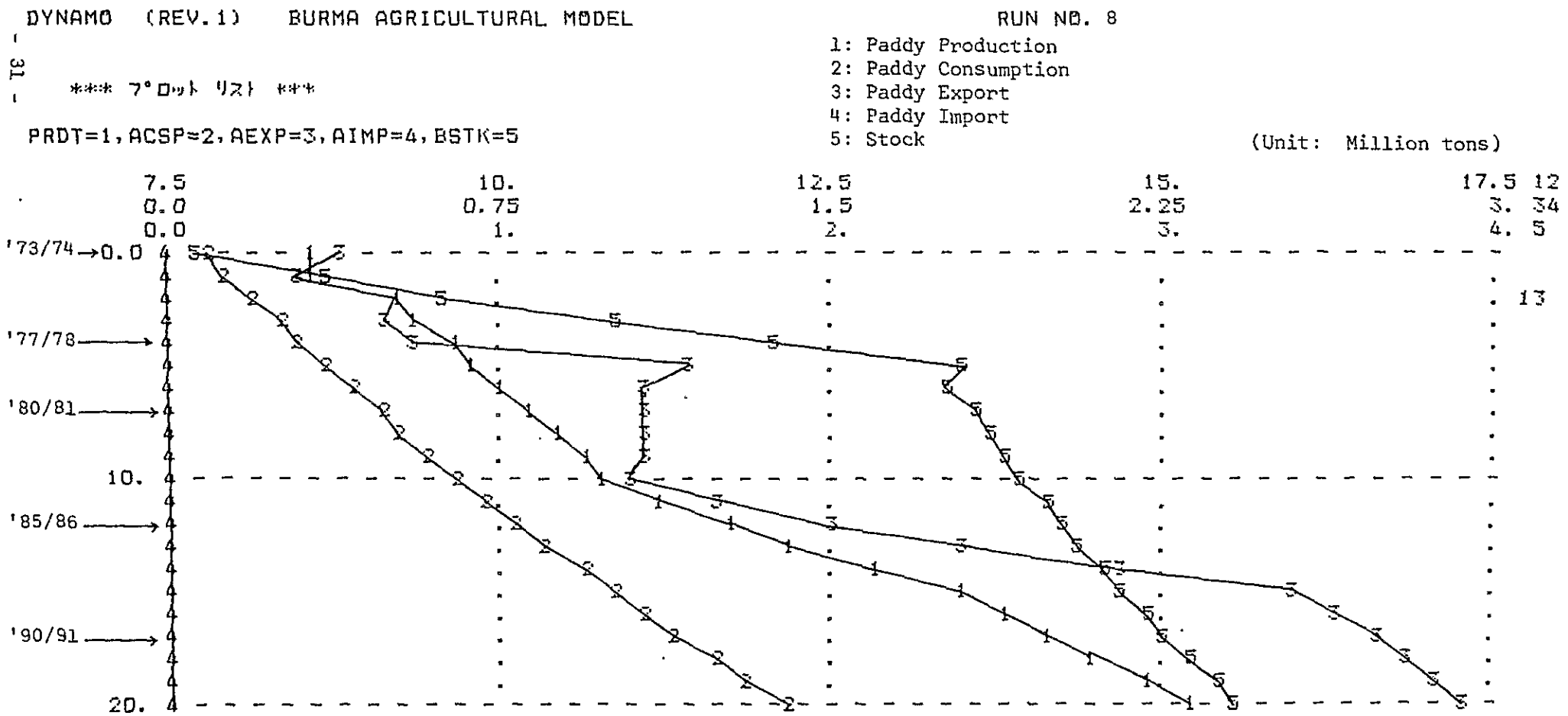


FIGURE III-14 DYNAMIC SIMULATION ON PADDY PRODUCTION AND BALANCE

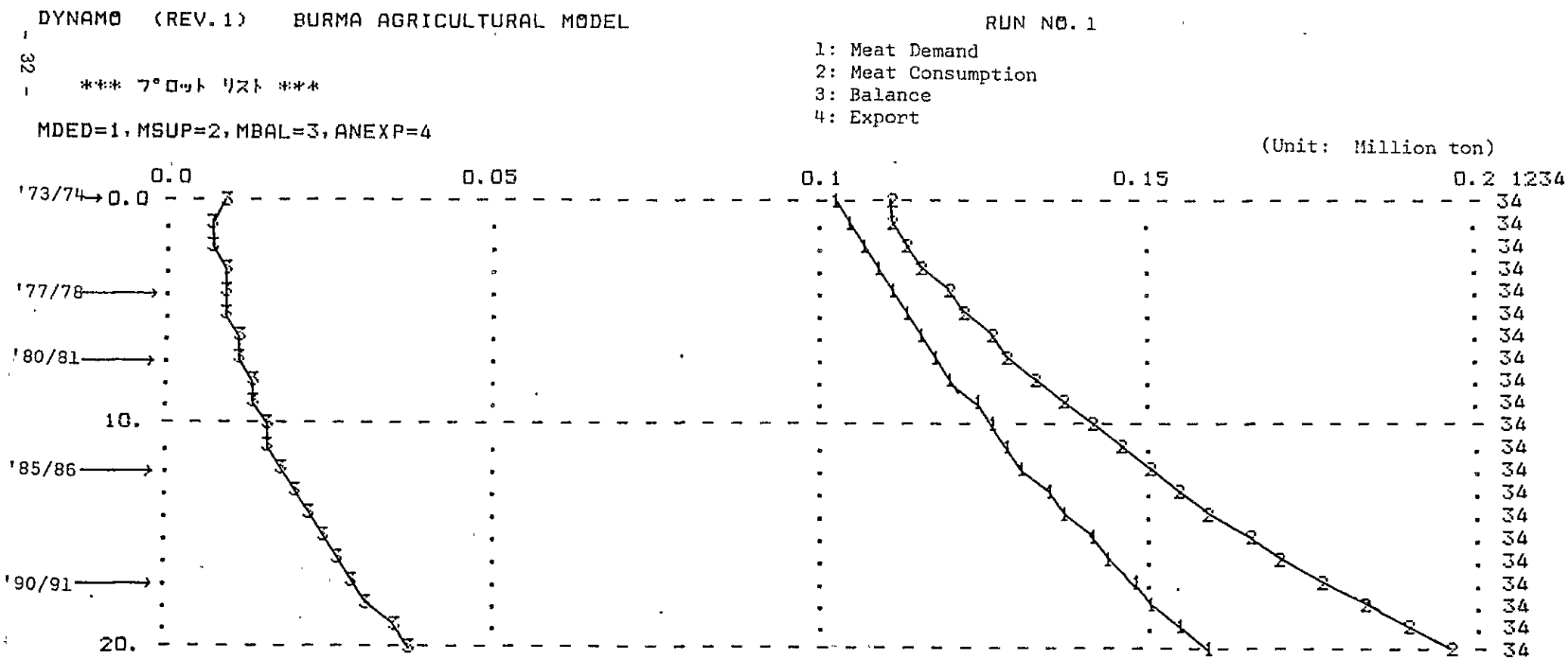


FIGURE III-15 DYNAMIC SIMULATION ON MEAT PRODUCTION AND BALANCE

APPENDICES

APPENDIX A-1 BACKGROUND OF THE SURVEY

1. History of the Survey

(1) Preliminary Survey

(A) Objective of Survey

The Irrawaddy River which has its origin far in the Himalayas advances southward flowing through the central part of Burma, joined by many tributaries such as the Magwe River and Numai Rivers and at the vicinity of Prome, diverses into the Bassein River and a main stream of the Irrawaddy River then flows into the Andaman Sea.

A vast tract of fertile alluvial plain formed downstream by a large volume of sand and silt deposited by this great river, Irrawaddy and its tributaries with their catchment area of 400,000 sq.km, performs a central role of agriculture with paddy field as the main constituent.

However, a fact that this fertile land of the Irrawaddy basin has not been fully utilized by lack of consolidation of infrastructures such as levees, irrigation and drainage facilities and roads. In order to fully exploit this potentials of the Irrawaddy basin, needless to state, various infrastructures must be consolidated. However, because of a fact that the basin is so vast and the matters to be consolidated are also so numerous that only by proceeding with individual consolidation plan carried fragmentarily comprehensive development of the district can not be achieved. Therefore, in order to achieve a real repayment from the investment on the district's comprehensive development, state of the Area should be clarified first and upon visualizing a state of the Area as it ought to be development plan for the whole Area should be conceived including not only agriculture but factors of other sectors and based on this basic direction respective plan should be promoted.

This survey is a preliminary survey to ensure a smooth survey for the drawing of basic plan to be implemented in future, and for

that purpose a discussion with the officials concerned the Government of Burma, the reconnaissance survey of the Project Area and collection of the relevant materials have been carried out. And an effort has been made to clarify in general the followings:

(1) Position to be given to this Development Plan and the content of the Burmese Government's request;

(2) Correlation to the cooperation plans of international organizations such as the World Bank, the Asian Development Bank and other countries;

(3) Tentative delineation of the Project Area;

(4) Comprehension of the state of the Project Area by reconnaissance survey

(B) Survey Team Member

The survey team member comprised the following members;

Name	Assignment	Present Post
Minoru IKEKA	Leader	Deputy Director, Land Improvement & Consolidation Div., Construction Dept., Agricultural Structure Improvement Bureau, Ministry of Agriculture & Forestry
Isao HORIUCHI	Hydrology	Senior Officer of Agricultural Civil Engineering, Design Div., Construction Dept., KANTO Regional Administration Office, Ministry of Agriculture & Forestry
Sumio KONDO	Irrigation & Drainage	Senior Officer of Agricultural Civil Engineering, Design Div., Construction Dept., TOKAI Regional Administration Office, Ministry of Agriculture & Forestry
Akira SAKANE	Agronomy	Senior Officer, Genetics Div., Genetics & Physiology Dept. National Institute of Agricultural Science, Ministry of Agriculture and Forestry

Name	Assignment	Present Post
Terushi EGASHIRA	Cooperation & Planning	Overseas Technical Cooperation Officer, International Cooperation Div., International Affairs Dept., Economic Affairs Bureau, Ministry of Agriculture & Forestry
Chikaichi TAKAHASHI	Agro-Economy	Agro-Economist, Agricultural Development Consoulting Association
Hideioshi YAOI	Coordination	Officer, Technical Affairs Div., Agricultural and Forestry Planning & Survey Dept., Japan International Cooperation Agency

(C) Itinerary of Survey Team

Date	Itinerary
Sep. 20	Tokyo → Bangkok (KL 862)
21	Bangkok → Rangoon (UB 222)
22	Courtesy call to the Minister of Agriculture and Forests
23	Courtesy call to the Director-General of the Overseas Economic Department, Planning and Finance Ministry and to the Director-General of the Planning and Statistics Department, Ministry of Agriculture and Forests. Consultation with the staffs of the Irrigation Department, Ministry of Agriculture and Forests
24	Consultation with the staffs of the Irrigation Department, Ministry of Agriculture and Forests. Collection of reference materials
25	Discussion among the Team members
26} 27} 28}	Listening to the briefing of the staffs of Irrigation Department, Agricultural Corporation and related agencies. Collection of reference materials. (Preparation work for reconnaissance survey)
29	Collection of reference Materials

Date	Itinerary	
Sep. 30 Oct. 1 2 3 4	1st reconnaissance survey	Fly to the district (Twin Otter) Inspection of the Nawin Irrigation Plan. Listening to the briefing of the related persons of each Township Inspection of the state of Irrawaddy River
5	Compilation of survey results and collected reference materials	
6	- do -	
7	Holding of joint meeting, report on the survey and discussion on the content	
8	Compilation of the survey's content, consultation on the latter half's schedule	
9	Two Team members, Egashira and Yaoi leave Rangoon	
10	Meeting with the World Bank's representatives, two Team members arrive Tokyo	
11	Observation of the proposed Thegaw dam site. Visit to the Taikkyi Agricultural Experiment Station	
12	Discussion among the Team members. Consultation on the 2nd reconnaissance survey. Visit to related agencies	
13 14 15	2nd reconnaissance survey	1st party -- Bassein District 2nd party -- Pyinmana Mandalay district
16	Compilation of reconnaissance survey	
17 18 19	Compilation work for reconnaissance report. Collection of reference materials	
20	Holding of joint meeting	
21	Submitting of a draft report of survey and explanation thereof	
22	Discussion among the Team members. Compilation of reference materials	
23 24 25	Drafting of survey's report, consultation on the content thereof and amendment work	

Date	Itinerary
Oct. 26	Submitting of survey report. Collection of reference materials and data
27	Compilation of reference materials and data
28	- do -
29	Rangoon → Tokyo

(2) First Stage Survey

(A) Scope of Works

a) Field investigation

b) Supplemental data collection

c) Hydrological survey

d) Crop and soil survey

e) Forestry investigation

f) Inland fishery investigation

g) Agro-economic survey

h) Other various surveys related to the Project.

(B) Member of the Mission

Name	Assignment	Present Post
Mr. Toshiki SAITO	Leader	Assistant Chief, Land Improvement & Consolidation Div. Construction Department. Kyushu Regional Agricultural Administration Office. Ministry of Agriculture and Forestry
Mr. Masao TAKAHASHI	Hydrology	Section Chief, Land Improvement & Consolidation Div. Agricultural Structure Improvement Bureau, Ministry of Agriculture and Forestry

Name	Assignment	Present Post
Dr. Hidehiko SHIRAISHI	Hydro Analysis	Chief Researcher, Irrigation Department. National Research Institute of Agricultural Engineering. Ministry of Agriculture and Forestry
Mr. Kiichi ITOH	Drainage	Researcher, Irrigation Department National Research Institute of Agricultural Engineering. Ministry of Agriculture and Forestry
Mr. Kazuo YAMADA	Forestry	Controller Audit Division Forestry Agency Ministry of Agriculture and Forestry
Mr. Heijiro YOSHIHARA	Agro-Economy	Advisor (Economist) Sanyu Consultants Inc. (S.C.I.)
Mr. Hironori TAKAHASHI	Hydrology	Computor Specialist, S.C.I.
Mr. Tetsuro HORI	Geology	Director, S.C.I.
Mr. Chuzo SAIKA	Agronomy & Soil	Advisor (Acquaculture Specialist), S.C.I.
Mr. Masahiro IIDA	Mapping Survey	Section Chief Engineer Third Technical Department, S.C.I.
Mr. Yukio ASAKURA	Inland Fishery	Advisor (Agriculture Specialist), S.C.I.
Mr. Tsugio HORII	Coordination	Official of Planning and Survey Department for Agriculture & Forestry. Japan International Cooperation Agency

(C) Itinerary of the Mission

Date (1978)	Itinerary
Feb. 6	Leave for Bangkok
7	Arrive in Burma Courtesy call to Japanese Embassy
8	Courtesy call to the Government of Burma
9 - 13	Collection of data from Department and Corporations concerned
14	Reconnaissance Survey by aircraft
15 - 17	First field Survey by all members
18	Meeting with all members
19	Holiday
20	Collection of data
21 - 25	Second trip
26	Holiday
27	Meeting with all members
28	Dr. Shiraishi and Mr. Ito arrive in Burma
Mar. 1	Meeting with Hydraulic analysis team
2 - 4	Third field survey on the Irrawaddy River
5	Holiday
6	Meeting with Mission and Irrigation Department
7	Reconnaissance survey by aircraft
8 - 10	Fourth field survey to right bank of the Irrawaddy river
11	Dr. Shiraishi and Mr. Ito leave for Japan
12	Mr. Asakura arrive in Burma
13 - 15	Fifth field trip at Pyinmana, meeting with Mission members and Agricultural Corporation

Name	Itinerary
Mar. 16	Courtesy call to the Government of Burma
17	Visit the Hmawbi Experimental Farm
18	Film show at Japanese Embassy
19	Holiday
20 - 22	Sixth field trip (Henzada)
23	National Holiday
24 - 25	Report writing
26	Holiday
27	National Holiday
28 - 29	Submit survey report and meeting with the Mission and the Government of Burma
30	Leave for Bangkok
31	Arrive in Japan

(3) Second Stage Survey

(A) Scope of Works

The Second Survey Team has carried out following surveys and investigations, accordingly.

a) Definite bordering of the Project Area
b) Regional economy
c) Agriculture
d) Agri-supporting service (Extension)
e) Agro-economy
f) Rivers, meteorology and hydrology
g) Irrigation and drainage
h) Soil
i) Forestry

j) Fishery

k) Further data collection

l) Other related miscellaneous, etc.

Related activities

In compliance with the request of the Burmese Government, the Government of Japan dispatched a so-called S-W Mission (Mission for Scope of Work) for consultation with Burmese Authorities concerned regarding the Scope of Works of feasibility study for the South Nawin Dam Project Proposed with top priority.

As a result that the Mission consulted with the Authorities concerned on 4th December, 1978, the Government of Japan has decided to carry out the first feasibility study on the South Nawin Dam Project for a period from January to March, 1979, and the second feasibility study will be conducted in the next fiscal year.

(B) Member of the Mission

Name	Assignment	Present Post
Mr. Heijiro YOSHIHARA	Project Planning (Leader)	Director of Sanyu Consultants Inc. (SCI)
Mr. Kouki MITSUNOBU	Regional Development	Manager of Engineering Department, SCI
Mr. Zenzaburo YAMAGUCHI	Regional Economy	Technical Advisor, SCI
Mr. Yoshitomo MIYANISHI	Agro-Economy	Staff of Overseas Project Department, SCI
Mr. Hironori TAKAHASHI	Hydrology	Section Chief of Engineering Dept., SCI
Mr. Masahiro IIDA	Irrigation	Section Chief of Overseas Project Engineering Dept. SCI
Mr. Nobuo ICHIJI	Drainage & Polder	Technical Advisor, SCI

Name	Assignment	Present Post
Mr. Hisashi ISHIKAWA	Soil	Technical Advisor, SCI
Mr. Chuzo SAIKA	Agronomy	Technical Advisor, SCI
Mr. Eiji NITSUU	Forestry	Staff of Overseas Project Dept., SCI
Mr. Toranosuke YOSHIMITSU	Inland Fishery	Technical Advisor, SCI
Mr. Toshinobu NAKANO	Hydro-Analysis	Staff of Engineering Dept. SCI

(C) Member of Counterpart

Name	Status
U Ba Aye	Executive Engineer Survey Section Irrigation Department
U Tha Tun Oo	Deputy General Manager Agriculture Corporation
U Way Phyo	Assistant Engineer Hydrology Section Irrigation Department

(D) Itinerary of the Survey Team

Date (1978/79)	Itinerary
Oct. 23	Left Japan for Bangkok
24	Arrived in Burma Courtesy call to Japanese Embassy in Burma
25	Courtesy call to Deputy Minister of the Ministry of Agriculture and Forests (MAF) and to the Planning and Statistic Department, MAF
26	Meeting with the Advisory Group (AG)
27	Courtesy call to Director General of Irrigation Department (ID), MAF

Date	Itinerary
Oct. 28	Data collection from Departments and Corporations concerned
29	Holiday
30	Field survey with the AG
31	National Holiday, Meeting with the AG Prepared the monthly report for JICA
Nov. 1	Field survey with the AG and meeting with Survey Department
2 - 3	Data Collection from Departments and Corporations Concerned
4	- ditto -
5	Holiday
6	Data collection and arrangement
7	Field Survey
8	- ditto -
9	Mr. Mitsunobu arrived in Burma Field survey
10 - 15	Field survey
16 - 18	Data collection, arrangement and analysis
19	Holiday
20 - 22	Data collection, arrangement and analysis
23	- ditto -
24	National Holiday
25	Field survey Data collection, arrangement and analysis
26	Holiday
27 - 28	Data collection and analysis

Date	Itinerary
29 - 30	Field survey, data collection and analysis Prepared the monthly report for JICA
Dec. 1	Field survey, data collection and analysis
2	Mr. Miyanishi arrived in Burma Field survey, data collection and analysis
3	Holiday
4 - 6	Field survey, data collection and analysis
7	Mr. Ichiji left for Japan
8 - 9	Field survey, data collection and analysis
10	Field survey, Holiday
11 - 16	Field survey and data collection
17	Holiday, Field survey
18 - 19	Field survey and data collection
20	Colombo Plan (c/p) experts, Messrs Goto and Shimada arrived in Burma, Field survey and data collection
21 - 22	Field survey, data collection and analysis
23	Messrs Yamaguchi, Saika, Yoshimitsu and Nitsuu left for Japan Field survey, data collection and analysis
24	Holiday
25 - 26	Data collection and analysis
27 - 30	Field survey, data collection and analysis
31	Holiday, prepared monthly report for JICA
Jan. 1, 1979	Holiday
2 - 3	Field report preparation
4	National Holiday
5 - 6	Field survey and Field report preparation

Data	Itinerary
Jan. 7	Holiday
8 - 13	Field report preparation
14	Holiday
15 - 20	Field report preparation
21	Holiday
22 - 23	Field report preparation
24	Meeting with Burmese Government and the AG
25 - 27	Field trip
28	Holiday
29	Meeting with the Japanese Embassy and the AG
30	Leave for Bangkok
31	Arrived in Japan

(4) Third Stage Survey

(A) Survey Items

(a) Regional Economic Survey

(b) Agro-Economic Survey

(c) Agri-Supporting System Survey

(d) Agricultural Survey

(e) Meteorology and Hydrology Survey

(f) Irrigation and Drainage Survey

(g) Survey for Rural Communities Development

(h) Agri-Related Infrastructure Survey

(i) Supplemental Data Collection

(B) Members of Survey Team

Name	Assignment	Present Post
Dr. Susumu NISHIKGAKI	Project Planning (Leader)	Technical Advisor, Sanyu Consultants Inc.(SCI)
Mr. Kohki MITSUNOBU	Regional Development	Manage of Engineering Department, SCI
Mr. Masahiro YAMADA	Hydrology	Section Chief of Technical Third Division, SCI
Mr. Masahiro IIDA	Irrigation	Section Chief of Overseas Project Engineering Dept., SCI
Mr. Toshinobu NAKANO	Drainage	Staff of Engineering Dept., SCI
Mr. Yasunori HASEGAWA	Agronomy	Section Chief of Overseas Project Engineering Dept., SCI
Mr. Kensuke IRIYA	Rural Development	Staff of Technical Third Dept., SCI
Mr. Yoshitomo MIYANISHI	Agro-Economy	Staff of Overseas Technical Project Engineering Dept., SCI
Mr. Yuya HIRASE	Hydro-Power	Technical Advisor, SCI

(C) Members of Colombo Plan Experts

Mr. Hyousaku GOTO	Regional Development Expert
Mr. Makoto SHIMADA	Hydrology Expert

(D) Member of Counterparts

U Ba Aye	Executive Engineer Survey Section Irrigation Department (ID), MAF
U Wai Phyo	Assistant Engineer Hydrology Section Irrigation Department (ID), MAF

U Than Tun Oo	Deputy General Manager Land Use Department, Agriculture Corporation (AC), MAF
U Hla Aye	Assistant General Manager Land Use Department (AC), MAF

(E) Itinerary of the Survey Team

Date (1979)	Itinerary
Jul. 23	The first group of the survey team (Messrs. S. NISHIGAKI, K. MITSUNOBU, H. HASEGAWA, M. IIDA, and Y. MIYANISHI) left for Bangkok with the supervisory group (Messrs. J. ABE, K. KONDO and R. GOTO).
24	Visited FAO Regional Office
25	The first group and the supervisory group arrived in Rangoon
26	The first group and the supervisory group paid a courtesy call to the Embassy of Japan. The second group (Messrs. M. YAMADA, K. IRIYA, T. NAKANO and Y. HIRASE) left for Bangkok
27	The first group and the supervisory group paid a courtesy call to the Burmese Government and the Minister of the Embassy of Japan. The second group arrived in Rangoon.
28	The survey team and the supervisory group paid a courtesy call to the Foreign Economic Relations Department (FERD).
29	Holiday
30	Field survey of the left bank of the Irrawaddy River from Rangoon to Prome with the supervisory group and Colombo Plan Experts
31	Field survey at the South Nawin Project area with the supervisory group and Colombo Plan Experts.
Aug. 1	Joint meeting at the Ministers' Office
2	The agriculture group (Messrs. S. NISHIGAKI, K. MITSUNOBU, Y. MIYANISHI, K. IRIYA and Y. HASEGAWA) had a meeting with officers of the Agriculture Corporation (AC).

Date	Itineray
Aug. 3	The engineering group (Messrs. K. MITSUNOBU, M. IIDA, M. YAMADA, T. NAKANO and Y. HIRASE) and two Colombo Plan Experts (C/P Experts) (Messrs. M. SHIMADA and H. GOTO) held a meeting with officers of the Irrigation Department (ID) at the head office of ID. The agriculture group held a meeting at the Agricultural and Farm Produce Trade Corporation (AFPTC), and the Veterinary and Animal Husbandry Department (VAHD).
4	The agricultural group met the Director General (DG) of the Agricultural Mechanization Department (AMD) and VAHD.
5	Holiday
6	The Team had three meetings with the Electric Power Corporation (EPC), the Fishery Department (FiD) and the Forest Department (FoD).
7	The survey team had four meetings with FERD, the Livestock Development and Marketing Corporation (LDMC) and EPC, Ministry of Planning and Finance.
8	The agricultural group went to Prome. The engineering group did the office work.
9	The agricultural group made the field survey around Prome. The engineering group left for Prome.
10	The survey team went to Kyangin for field survey
11	The team went to Henzada
12	The agricultural group went to the Upper Delta area and the engineering group went to the Thenet Chaung and the Myitmaka River
13	The team returned to Rangoon
14	Meeting with team members and Colombo Plan Experts at Agriculture Corporation team office. Arrangement of collected data about the field survey.
15	The engineering group visited the Paddy II Project Office, Irrigation Department. Meeting with LDMC. Meeting with AMD.

Date	Itinerary
Aug. 16	Office Work. Meeting with LDMC. Meeting with Agriculture Corporation about cropping pattern.
17	The engineering group went to the Paddy I Project Office, Irrigation Dept. Planning and Statistics Department. Ministry of Planning and Finance.
18	Office work. Meeting with Land Use Department
19	Holiday
20	Office work. Meeting with FiD. Meeting with Land Use Department.
21	Office work
22	Doing the Draft Field Report
23	Doing the Draft Field Report Supervisory group arrived in Rangoon
24	Doing the Draft Field Report, M/P Team and the Supervisory group had a meeting.
25	Field survey for rural development plan in Tharrawaddy Township. Supervisory and Agricultural and Engineering group went for field trip.
26	Holiday
27	Joint meeting with the Burmese Government, the supervisory group and Colombo Plan Experts.
28	Meeting with the supervisory group and doing the Field Report.
29	Doing the Field Report, the supervisory group left for Bangkok.
30	Agricultural group went to Taikkyi for field survey
31	Meeting with the Survey Department.

Date	Itinerary
Sep. 1	Doing the Field Report
2	Holiday
3	Doing the Field Report The Second group left for Bangkok.
4	Meeting with the Forest Department.
5	Submitted Field Report to the Burmese Government.
6	Left for Bangkok
7	Arrived in Japan

2. Contens of the Survey

IRRAWADDY BASIN INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT IN THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

SCOPE OF WORKS

MASTER PLAN SURVEY ON THE SECOND STAGE FOR IRRAWADDY BASIN AGRICULTURE DEVELOPMENT PROJECT

I. INTRODUCTION

In response to the request of the Government of the Socialist Republic of the Union of Burma (hereinafter referred to as "the Government"), the Government of Japan has decided to undertake the master plan survey for the Irrawaddy Basin Agricultural Integrated Development Project (hereinafter referred to as "the Project") as a part of the Government of Japan's technical cooperation programme.

Accordingly, Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the Government of Japan's technical cooperation programme dispatched a team to conduct the preliminary survey for about seven weeks from September 1977 and the first stage survey for about eight weeks from February 1978, in order to orientate the approach of the execution of the survey.

The master plan survey consists of the first stage, the second stage, and the third stage as shown in the table attached.

The scope of works for the master plan survey on the second stage is prepared on the basis of the results obtained from the preliminary survey and the first stage survey, describing the items to be surveyed, and services and facilities to be provided by the Government for the smooth execution of the survey.

The Japan International Cooperation Agency will be the executing agency and carry out the survey under the cooperation of the Government.

II. OBJECTIVE OF SURVEY

For the purpose of the Project, this survey will be conducted as a basic survey in order to establish the master plan for the proposed area 2,500,000ha. in the Irrawaddy Basin.

III. OUTLINE OF SURVEY

As the master plan survey on the second stage, the team conducts the survey according to the items mentioned below.

1. Field investigation
2. Supplemental data collection
3. Regional economic survey
4. Agro-economic survey
5. Agricultural supporting system survey
6. Agricultural survey
7. Agro-marketing survey
8. Delineation of the Project area
9. River surveying
10. Meteorological and hydrological survey
11. Water resources survey
12. Irrigation and drainage survey
13. Soil survey
14. Forestry survey
15. Inland fishery survey
16. Other various surveys related to the Project

IV. REPORT

The Field Survey Report (English version) in twenty (20) copies should be submitted to the Government when the field survey is completed.

V. UNDERTAKINGS OF THE GOVERNMENT

1. The Government should provide the data and information necessary for the survey.
2. The Government should arrange for the quick and smooth customs clearance of the survey equipment and materials which the team members will bring into the field so as to exempt from any taxes and duties imposed by the Government for the goods brought by the team members in Burma.
3. The Government should make arrangement for the exemption of taxes, duties and levies incurred during the survey by the team.
4. The Government should request the ministries and other governmental organizations concerned to cooperate with the team in smooth execution of the survey.
5. The counterparts personnel in the following fields should be designated to cooperate with the team in conducting the survey effectively.

    1. General Planning
    2. Irrigation and drainage
    3. Soil
    4. Geology
    5. Hydrology
    6. Surveying
    7. Fishery (freshwater)
    8. Forestry
    9. Agronomy
    10. Agro-economy
    11. Economy

The number of counterparts personnel and their respective assignment periods should be decided by prior consultation of the team with the authorities concerned to commencement of the survey.

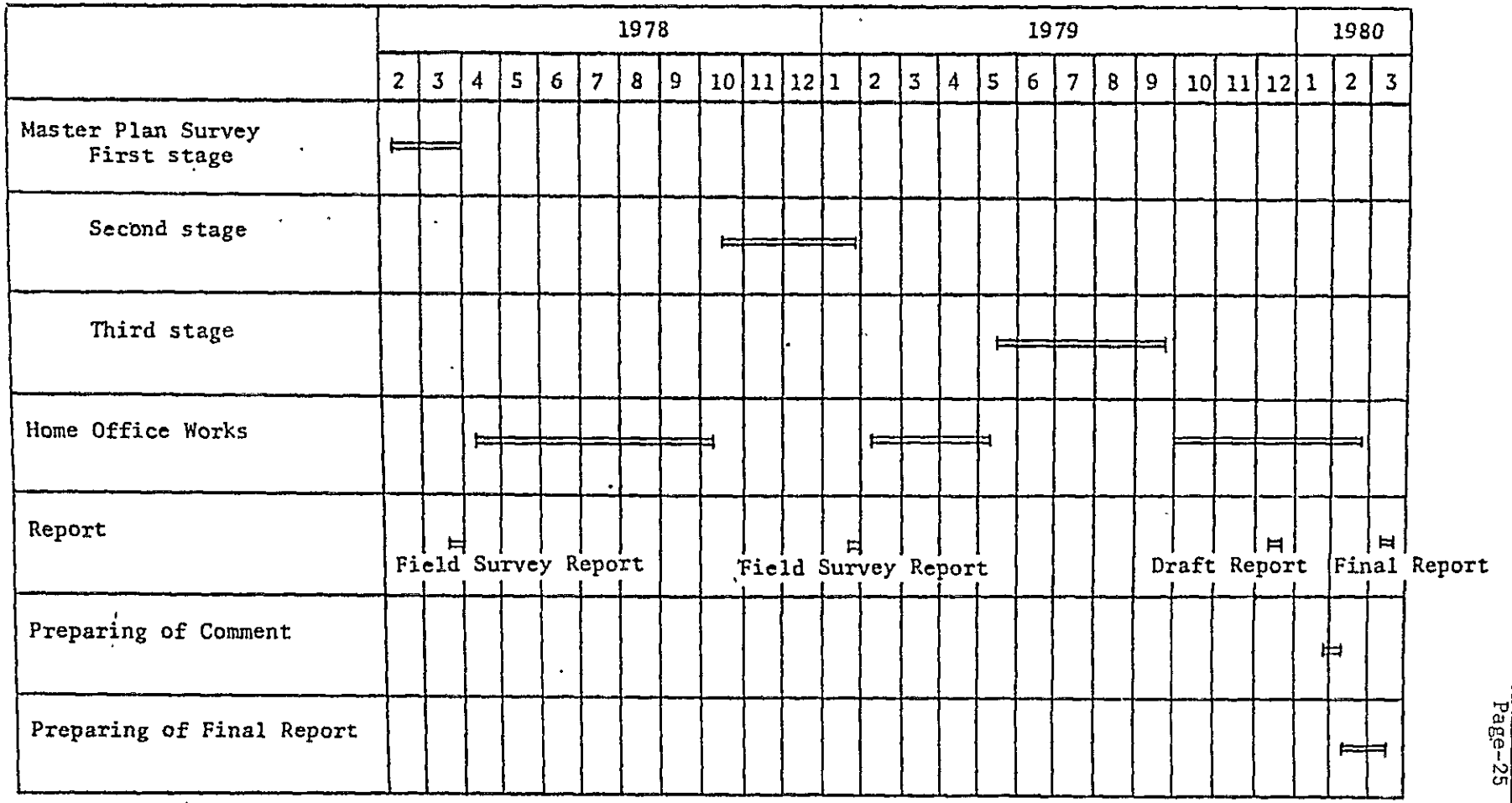
6. The Government should carry out a river surveying of the Myitmaka River.
7. The Government should set up the meteorological and hydrological equipments provided by the Government of Japan.
8. The Government should provide the team with office space.
9. The necessary arrangement should be made to obtain the permission of the authorities concerned for the team to conduct the survey in the Project areas.
10. During the surveying period, the security of the team members should be guaranteed by the authorities concerned.

VI. UNDERTAKINGS OF THE GOVERNMENT OF JAPAN

For the purpose of the survey, the Governmant of Japan will assist to the extent possible;

6-1. Sending the Japanese expert team to conduct the survey,
6-2. Transferring the knowledge to the counterparts during the period of the survey,
6-3. Providing the equipment necessary for the purpose of this survey.

Tentative Schedule



PLAN OF OPERATION
FOR
MASTER PLAN SURVEY TEAM ON THE SECOND STAGE FOR
IRRAWADDY BASIN
INTEGRATED AGRICULTURE DEVELOPMENT PROJECT

The Socialist Republic of the Union of Burma

I. Introduction

This is the specifications that cover the survey works to be carried out by the Japan International Cooperation Agency (JICA) for the Secondary Field Survey of the Irrawaddy River Basin Integrated Agriculture Development Project in the Socialist Republic of the Union of Burma and hereinafter referred to as Specifications.

II. Purpose

The survey aims at providing various data for plan formulation of the comprehensive agricultural development of about 2,500,000 hectares extending in the Irrawaddy River Basin, based on the results obtained from the preceding Preliminary Survey (Sept. - Oct., 1976) and the Primary Field Survey (Feb. - Mar., 1977) which were conducted by the JICA.

III. Period of Field Survey

The field survey shall be carried out for the period between the third decade of October, 1978 and the end of January, 1979.

IV. Survey Team Members and Schedule

The Secondary Survey Team consists of a Team Leader and eleven (11) experts.

The relevent member list and the work schedule are separately attached hereto.

V. Specific Details of Survey

1. Field Survey

(1) Regional economic survey

On the basis of the national development program and the related data and information, the regional economy including various sectors in the Project Area shall be forecast., and the co-rela t ionship of this forecast and the development of agriculture, fishery and forestry shall also be studied.

For the three districts, the Myimatka River Basin, the West Bank District of the Irrawaddy River and the Delta Upstream District, the survey shall be made to study the current status of agriculture, fishery and forestry and their relative importance among the various sectors in the Project Area as well as to clarify the anticipated influence which will be given to the above three sectors by development of other industries.

(2) Agro-economic survey

The survey shall be made to study the present sit u ation of agro-economy in the Project Area, and of the rural infrastructure.

A fact-finding survey shall be made on model-farmer and/or sample village, if necessity requires.

(3) Agricultural supporting system survey

The survey shall be made on the administrative organization providing supporting measures for agricultural production.

(4) Agricultural Survey

In succession of the Primary Survey, survey shall be made on crop-wise production, cropping patterns, crop varieties, farming techniques, etc. in 24 townships involved in the Project Area, and the study shall be made on the Kain Land as well.

(5) Agro marketing survey

The survey shall be made on the present situation of marketing of products of agriculture, fishery and forestry.

(6) Delineation of the Project Area

The delineation of the area for the Project shall be made on the basis of the maps available.

(7) Surveying

For hydraulic analysis of the Mimatka River, the necessary surveying works shall be conducted for cross-section and profile of the River, the cross-section at the proposed water-level observation point.

For the main stream of the Irrawaddy, the cross-section surveying works shall be conducted at the necessary points of the River in avoiding duplication of the works made by British Consultants for hydrological analysis.

(8) River surveying

The surveying shall be made on the present conditions of the rivers so as to formulate plans on irrigation/drainage and road networks.

(9) Meteorological and hydrological survey, and installation of the relating devices required

For major rivers and streams in the Project Area, observations shall be made on discharges, water-level and meteorology. The necessary equipment shall be installed at the proposed observation points to establish the well-functioning observation system.

(10) Water resources survey

The survey shall be made on water resources to be required for plan formulation of land use.

(11) Irrigation and drainage survey

The present plan of irrigation/drainage shall be reviewed and the survey shall be made on existing drainage system.

The measuring device of water-requirements depth shall be installed at the necessary points to collect the data.

(12) Soil survey

The soil survey shall be made to make plans for land use and cropping pattern. The survey shall be conducted by stick type soil sampler for the ground surface (0 m), 0.5 m deep and 1.0 m deep points, respectively in the sites of representing places in the Project Area.

(13) Forestry survey

The survey and study shall be made on the following items:-

1) to make reforestation program and establish its method

2) to provide with nursery facilities considering their proper layout

3) to survey on existing waste lands growing low-quality plants for timber

4) to study the present forestry production, including processing facilities, raw materials and final products

5) to make a plan of transportation system based on the survey of its present conditions

(14) Inland fishery survey

The survey shall be made on the present conditions of fish cultivation in terms of techniques and facilities, and also on the selection of proper kinds of fish for cultivation by the application of fertilizer.

(15) Supplemental data collection

Further data collection shall be made to supplement and support in details the collected data in the Preliminary Study and the Primary Survey.

MASTER PLAN SURVEY TEAM ON THE SECOND STAGE FOR
IRRAWADDY BASIN
AGRICULTURE INTEGRATED DEVELOPMENT PROJECT

Project Planning	Mr. Heijiro YOSHIHARA	Director of Sanyu Consultants Inc. (SCI)
Regional Development	Mr. Kouki MITSUNOBU	Manager of Engineering Department, SCI
Regional Economy	Mr. Zenzaburo YAMAGUCHI	Technical Advisor, SCI
Agro-Economy	Mr. Yoshitomo MIYANISHI	Staff of Overseas Project Department, SCI
Hydrology	Mr. Hironori TAKAHASHI	Section Chief of Engineering Dept., SCI
Irrigation	Mr. Masahiro IIDA	Section Chief of Overseas Project Engineering Dept., SCI
Drainage & Polder	Mr. Nobuo ICHIJI	Technical Advisor, SCI
Soil	Mr. Hisashi ISHIKAWA	Technical Advisor, SCI
Agronomy	Mr. Chuzo SAIKA	Technical Advisor, SCI
Forestry	Mr. Eiji NITSUU	Staff of Overseas Project Dept., SCI
Inland Fishery	Mr. Toranosuke YOSHIMITSU	Technical Advisor, SCI
Hydro-Analysis	Mr. Toshinobu NAKANO	Staff of Engineering Dept. SCI

Work Schedule

Speciality	Name	1978 7	8	9	10	11	12	1979 1	2	3
	Work Schedule						Field			
Leader	H. YOSHIHARA									
Regional Development	K. MITSUNOBU									
Regional Economy	Z. YAMAGUCHI									
Agro-Economy	Y. MIYANISHI									
Hydrology	H. TAKAHASHI									
Irrigation	M. IIDA									
Drainage & Polder	N. ICHIJI									
Soil	H. ISHIKAWA									
Agronomy	C. SAIKA									
Forestry	E. NITSUU									
Inland Fishery	Y. YOSHIMITSU									
Hydro-Analysis	T. NAKANO									

PLAN OF OPERATION

FOR

THE MASTER PLAN SURVEY OF THE THIRD STAGE

ON

THE IRRAWADDY BASIN

AGRICULTURAL INTEGRATED DEVELOPMENT PROJECT

IN

THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

JULY 1979

JAPAN INTERNATIONAL COOPERATION AGENCY

PLAN OF OPERATION
FOR
THE MASTER PLAN SURVEY OF THE THIRD STAGE
ON
THE IRRWADDY BASIN
AGRICULTURAL INTEGRATED DEVELOPMENT PROJECT

The Socialist Republic of the Union of Burma

I. Introduction

This is the specifications that cover the survey works to be carried out by the Japan International Cooperation Agency (JICA) for the Third Field Survey of the Irrawaddy Basin Integrated Agricultural Development Project in the Socialist Republic of the Union of Burma and hereinafter referred to as Specifications.

II. Purpose

The survey aims at providing various data for plan formulation of the comprehensive agricultural development of about 2,800,000 hectares extending in the Irrawaddy Basin, based on the results obtained from the Preliminary Survey (Sept. - Octo., 1977) and the Field Surveys (Feb. - Mar., 1978 and Oct. 1978 - Jan. 1979) which were conducted by the JICA.

III. Period of Field Survey

The field survey shall be carried out for the period between the end of July 1979 and the beginning of September 1979.

IV. Survey Team Members and Schedule

The Third Stage Survey Team consists of a Team Leader and eight (8) experts.

The relevant member list and the work schedule are separately attached hereto.

V. Specific Details of Survey

1. Field Survey

(1) Regional economic survey

The survey will be made on the following items:

(i) to define the role of agriculture, forestry and fishery in the Project Area;

(ii) to divide the Project Area into groups based on the respective regional characteristics;

(iii) to forecast the regional economy; and,

(iv) to make regional economic survey for metrical analysis of demand-and-supply relation of major products of agriculture, forestry and fishery.

(2) Agro-economic survey

The fact-finding survey on the regional agro-economy and individual farm survey by sampling and/or interviewing will be made for agro-economic analysis to establish the development program.

(3) Agri-supporting system survey

The systematic survey will be made on agricultural administrative organizations and other organizations to support farm production as well as farmers' activities. Survey items included are experimental and research institutions, agricultural credit systems, extension and educational organizations, marketing and processing, agricultural

inputs supply systems, farmers' organizations, etc.

(4) Agricultural survey

The survey will be made on townshipwise and cropwise production of major crops in the Project Area, land use, cropping pattern, farming techniques, farm mechanization, animal husbandry and other matters concerned with farm management.

(5) Meteorology and hydrology, and installation of the relating devices required

Continuous observation will be made on discharges and water level of the major rivers in the Project Area, and also meteorological observations in their river basins. When new observation points are required, necessary devices should be increasingly installed to complete the observation network in the Project Area. Meteorological and hydrological surveys will supplement the existing data available.

(6) Irrigation and drainage survey

Based on the available data of meteorology, hydrology, and land use survey, the survey will be made to supplement the data and information for general planning of the irrigation and drainage scheme. Besides the above, the data collection will be continued to verify the existing survey results.

(7) Survey for rural communities development

A variety of surveys will be made for selected model district so as to prepare the rural community development scheme.

(8) Agri-related infrastructure survey

The fact-finding survey will be made on agri-related infrastructures such as road networks, waterworks, electrification, etc. Furthermore, the water resources survey will be made both in the Project Area and its vicinity for technical and economical feasibility of the power generation.

(9) Supplemental data collection

Further data collection will be made to supplement and support its collected data in the Preliminary Survey and the First and Second Stage Field Surveys. In addition to the above data collection, the data should be positively collected concerning with respected projects in other type than the current Project in the Project Area and its vicinity.

2. Home Works

The report on agricultural integrated development plan in the Project Area will be compiled with analytical and comprehensive study on the collected data in the current survey as well as effective use of the data and information collected in the First and Second Stage Field Survey and other agri-related projects which were survey or are now under survey in the areas concerned.

The report should be prepared along with the guidelines mentioned below.

(1) to divide the Project Area into groups based on the regional characteristics.

(2) to formulate development plans for each grouped development program.

(3) to confirm the effects of each grouped program.

(4) to decide the development priority among the groups.

(5) to prepare the land use scheme including soil conservation and reclamation of farm lands.

(6) to prepare the irrigation and drainage scheme.

(7) to prepare the agricultural development plan including agriculture, animal husbandry, etc.

(8) to prepare the rural area electrification plan.

(9) to prepare rural community development plan.

(10) to formulate the forestry development plan.

(11) to formulate the inland fishery development plan.

(12) to make cost estimates for the respective plans and schemes, and to study their benefit to be produced; and,

(13) to study other matters related to project, including necessary infrastructure.

WORK SCHEDULE

Speciality / Name	Work Schedule	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
	Year / Month	1979							1980		
				Field						To submit Draft Report	
Project Planning	S. NISHIGAKI										
Regional Development	K. MITSUNOBU										
Hydrology	M. YAMADA										
Irrigation	M. IIDA										
Drainage	T. NAKANO										
Agronomy	Y. HASEGAWA										
Rural Planning	K. IRIYA										
Agro-Economy	Y. MIYANISHI										
Hydro-Power	Y. HIRASE										

MASTER PLAN SURVEY TEAM ON THE THIRD STAGE FOR

IRRAWADDY BASIN

AGRICULTURE INTEGRATED DEVELOPMENT PROJECT

Project Planning	Mr. Susumu NISHIGAKI	Advisor, Sanyu Consultants Inc. (SCI)
Regional Development	Mr. Koki MITSUNOBU	Manager, Engineering Dept., SCI
Hydrology	Mr. Masahiro YAMADA	Section Chief, Engineering Dept., SCI
Irrigation	Mr. Masahiro IIDA	Section Chief, Overseas Project Engineering Dept., SCI
Drainage	Mr. Toshinobu NAKANO	Staff, Engineering Dept., SCI
Agronomy	Mr. Yasunori HASEGAWA	Section Chief, Overseas Project Engineering Dept., SCI
Rural Planning	Mr. Kensuke IRIYA	Staff, Engineering Dept., SCI
Agro-Economy	Mr. Yoshitomo MIYANISHI	Staff, Overseas Project Engineering Dept., SCI
Hydro Power	Mr. Yuya HIRASE	Technical Advisor, SCI

APPENDIX A-2 RESULTS OF PRINCIPAL COMPONENT ANALYSIS

Model No. 1

*** PRINCIPAL COMPONENT ANALYSIS ***

** PARAMETER **

NUMBER OF VARIABLES: 12

NUMBER OF DATA: 26

CONTRIBUTIVE FACTOR FOR DETERMINING NO. OF PRINCIPAL COMPONENT: 1.0000

** RESULTS **

** INDER = 0 **

1. MEAN AND STANDARD DEVIATION

VARIABLE NO	MEAN	STANDARD DEVIATION
1	125.735	45.8980
2	1894.462	486.7413
3	274.419	126.3862
4	111900.538	43782.6139
5	98108.346	90673.9518
6	0.397	0.1751
7	0.040	0.0537
8	3628.769	1380.3246
9	43.973	4.1476
10	23038.231	29431.5794
11	904.385	517.0934
12	151.692	84.2552

2. STANDARDIZED DATA

DATA NO.	TOWNSHIP	VARIABLE 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-1.1555	-1.2439	1.5586	-1.2294	1.4107	-1.7144	-0.5805	-1.3741	-1.0785	3.7801	-1.2848	-1.3494
2	PROME	0.4764	-1.2460	-0.6300	-0.4723	-0.7909	0.1079	-0.2827	-0.5265	-0.5239	1.0819	0.3590	0.1579
3	PADAUNG	-0.4518	-1.2460	2.7304	-1.2020	2.9086	-2.0000	-0.3571	-1.2734	0.5128	-0.7251	-1.0779	-1.0052
4	PAUNGDE	-0.4561	-1.0282	-0.3554	-0.7344	-0.1280	-0.4862	-0.6363	-0.2628	0.9709	0.7971	0.5330	0.2292
5	THEGON	-0.4234	-1.2460	-0.6529	-0.2005	-0.5676	0.5820	-0.5805	0.2631	0.2958	-0.6120	0.4943	0.1342
6	SHWEDAUNG	-0.4278	-1.2645	-0.7336	-0.7277	-0.8350	-0.4234	1.1874	-1.0409	-0.9820	0.4215	-0.6467	-0.8272
7	NATTALIN	0.1060	-1.0282	0.5023	0.1237	1.0449	-0.3777	-0.7107	0.7304	1.4049	-0.4550	0.6897	1.0006
8	ZIGON	-1.4714	-0.8104	-1.6918	-1.4813	-0.9874	2.0044	-0.6735	-1.1228	1.2602	-0.7594	-0.1052	0.2054
9	GYOBINGAUK	-0.7110	-0.8104	-0.6672	-0.4961	-0.1424	0.2793	-0.5060	0.1262	0.9709	-0.6359	0.3976	0.7158
10	MONYO	-0.5084	0.3586	-0.9203	-0.6199	-1.0820	-0.6405	3.5879	-1.8291	0.4887	-0.5231	-1.5266	-1.6224
11	OKPO	-0.7219	-0.8104	-0.1180	-0.5027	0.4784	-0.3491	-0.6363	0.2146	1.1638	-0.3020	0.6394	0.8582
12	MINHLA	-0.6369	0.3586	-0.8634	-0.6039	-0.4819	0.4049	-0.0036	-0.2136	1.0914	-0.6822	0.2623	1.0125
13	LETPADAN	0.2803	0.3915	0.7357	0.2589	1.0551	-0.5890	-0.1524	0.8920	1.5254	-0.4283	0.1250	1.0837
14	THARRAWADDY	-0.2034	0.4223	-0.1513	-0.1102	0.0652	-0.0692	-0.2455	0.2979	0.7539	-0.0402	1.5599	0.0867
15	TAIKKYI	0.2738	1.7145	1.2057	1.4830	0.8063	-0.0921	-0.7107	1.0688	-1.1267	0.7276	0.5814	-0.0201
16	HLEGU	0.2956	1.7762	1.3244	1.6814	0.3872	-0.0121	-0.7479	1.3969	-1.8741	1.6672	0.6007	-1.1951
17	HMAWBI	-0.5542	1.8378	-1.1870	-0.6037	-1.0625	1.1533	-0.7293	-0.9489	-2.2840	-0.5230	-1.1688	-1.3731
18	KYANGIN	-1.1707	-0.3030	0.0798	-1.3765	0.7364	-1.4231	-0.5432	-1.3597	-0.3552	-0.7220	-1.2829	-1.1357
19	MYANAUNG	1.3174	-0.3030	0.8639	1.1474	0.6939	-0.3491	-0.0222	1.1238	-0.1864	-0.4575	-0.7801	-0.1625
20	INGABU	1.3261	0.6400	1.0095	1.2912	0.4811	-0.3320	0.3314	1.1861	-0.3793	0.4450	-0.7550	0.4784
21	LEMYETHNA	-0.8526	0.6400	-0.1505	-0.6864	0.4221	-0.8975	0.1639	-0.9061	-0.2828	-0.1152	-1.4202	-0.3049
22	YEGYI	0.6725	0.6400	0.3353	0.9844	-0.0843	0.0279	0.3872	0.5725	-0.5963	0.0148	0.0399	-0.0676
23	HENZADA	3.3131	0.6400	-0.2533	1.8128	-1.0820	1.1533	1.3176	1.7077	-0.0176	-0.7362	1.7804	2.9352
24	ZALUN	0.4263	0.6400	-0.7123	0.3416	-1.0820	0.6049	1.8015	-0.1983	-0.1623	-0.2542	-0.2212	-0.0794
25	KYONPYAW	0.9557	0.6400	-0.5524	1.2893	-1.0820	1.7531	-0.7479	1.0144	-0.5963	-0.5989	-0.0472	0.6920
26	DANUBYU	0.3021	0.6400	-0.7059	0.6332	-1.0820	1.6845	0.0895	0.4617	0.0065	-0.3652	2.2542	-0.4474

3. CORRELATION COEFFICIENT MATRIX

VARIABLES	VARIABLES 1	2	3	4	5	6	7	8	9	10	11	12
1	1.0000	0.3466	0.1603	0.8427	-0.1766	0.2887	0.2499	0.7529	-0.1629	-0.1116	0.3965	0.5603
2	0.3466	1.0000	-0.0032	0.6062	-0.2291	0.3324	0.1257	0.3973	-0.4830	-0.0774	0.1009	-0.0435
3	0.1603	-0.0032	1.0000	0.2308	0.8913	-0.6795	-0.2407	0.2204	-0.1511	0.3998	-0.1711	-0.1594
4	0.8427	0.6062	0.2308	1.0000	-0.1313	0.3433	0.0754	0.8969	-0.2965	0.0008	0.4425	0.3891
5	-0.1766	-0.2291	0.8913	-0.1313	1.0000	-0.7881	-0.3821	-0.0150	0.1257	0.2456	-0.2717	-0.1606
6	0.2887	0.3324	-0.6795	0.3433	-0.7881	1.0000	-0.0332	0.3486	-0.0322	-0.3664	0.5147	0.3765
7	0.2499	0.1257	-0.2407	0.0754	-0.3821	-0.0332	1.0000	-0.2125	0.0273	-0.1681	-0.1940	-0.0839
8	0.7529	0.3973	0.2204	0.8969	-0.0150	0.3486	-0.2125	1.0000	-0.0050	-0.0735	0.6265	0.6283
9	-0.1629	-0.4830	-0.1511	-0.2965	0.1257	-0.0322	0.0273	-0.0050	1.0000	-0.4492	0.2807	0.5057
10	-0.1116	-0.0774	0.3998	0.0008	0.2456	-0.3664	-0.1681	-0.0735	-0.4492	1.0000	-0.1166	-0.3450
11	0.3965	0.1009	-0.1711	0.4425	-0.2717	0.5147	-0.1940	0.6265	0.2807	-0.1166	1.0000	0.5937
12	0.5603	-0.0435	-0.1594	0.3891	-0.1606	0.3765	-0.0839	0.6283	0.5057	-0.3450	0.5937	1.0000

4. EIGEN VALUE

COMPONENT NO.	EIGENVALUE	CUMULATIVE CONTRIBUTION
1	4.1379	0.3448
2	2.7259	0.5720
3	2.0719	0.7446
4	1.2192	0.8462
5	0.7988	0.9128
6	0.4366	0.9492
7	0.2765	0.9722
8	0.1654	0.9860
9	0.1148	0.9956
10	0.0393	0.9989
11	0.0086	0.9996
12	0.0051	1.0000

5. EIGENVECTORS

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.3842	0.2238	-0.0421	0.3151	-0.2017	-0.3585	-0.1670	0.2761	-0.1928	-0.6130	-0.0896	-0.0834
2	0.2375	0.1400	-0.4191	0.0017	0.4926	0.4479	0.4538	0.2252	-0.0984	-0.1893	-0.0218	0.0492
3	-0.1308	0.5552	0.1219	0.1235	0.0718	0.0585	-0.1936	0.0086	-0.4163	0.1968	0.1933	0.5908
4	0.3970	0.3091	-0.1395	0.0944	0.0062	0.0161	-0.0859	-0.3997	0.1485	0.1664	0.6053	-0.3672
5	-0.2487	0.4270	0.2963	0.0723	0.2449	0.0625	-0.0208	0.0653	-0.1967	0.1350	-0.3436	-0.6475
6	0.3566	-0.2985	-0.1222	-0.3049	0.0832	-0.1235	-0.1179	-0.2707	-0.7035	0.1799	-0.1809	-0.0806
7	0.0365	-0.1750	-0.2577	0.7311	-0.3049	0.3053	-0.0416	-0.0497	-0.0932	0.3317	-0.2389	-0.0311
8	0.4070	0.2883	0.1275	-0.0642	0.0415	-0.0125	0.0322	-0.4074	0.3817	0.0498	-0.5870	0.2633
9	0.0077	-0.2203	0.5827	0.2206	0.0374	0.3554	0.1951	-0.4016	-0.1852	-0.4241	0.1439	0.0362
10	-0.1604	0.3022	-0.1816	-0.3207	-0.6950	0.1725	0.4010	-0.1473	-0.1703	-0.1187	-0.0514	-0.0777
11	0.3497	-0.0162	0.2535	-0.2841	-0.2293	0.5743	-0.4136	0.4065	0.0676	0.0698	0.0132	-0.0506
12	0.3423	-0.0344	0.4076	0.0864	-0.1130	-0.2622	0.5782	0.3426	-0.0452	0.4001	0.1088	0.0293

6. CORRELATION COEFFICIENT BETWEEN COMPONENT AND ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.7814	0.3695	-0.0605	0.3479	-0.1803	-0.2369	-0.0878	0.1123	-0.0653	-0.1215	-0.0083	-0.0060
2	0.4831	0.2311	-0.6033	0.0019	0.4403	0.2960	0.2386	0.0916	-0.0333	-0.0375	-0.0020	0.0035
3	-0.2660	0.9167	0.1755	0.1364	0.0642	0.0387	-0.1018	0.0035	-0.1410	0.0390	0.0179	0.0423
4	0.8077	0.5103	-0.2007	0.1043	0.0056	0.0106	-0.0452	-0.1626	0.0503	0.0330	0.0561	-0.0263
5	-0.5060	0.7050	0.4265	0.0798	0.2189	0.0413	-0.0109	0.0265	-0.0666	0.0268	-0.0318	-0.0463
6	0.7255	-0.4928	-0.1759	-0.3367	0.0744	-0.0816	-0.0620	-0.1101	-0.2383	0.0357	-0.0168	-0.0058
7	0.0743	-0.2890	-0.3710	0.8073	-0.2725	0.2017	-0.0219	-0.0202	-0.0316	0.0658	-0.0221	-0.0022
8	0.8279	0.4760	0.1835	-0.0709	0.0371	-0.0082	0.0170	-0.1657	0.1293	0.0099	-0.0544	0.0188
9	0.0157	-0.3638	0.8387	0.2436	0.0334	0.2348	0.1026	-0.1633	-0.0627	-0.0841	0.0133	0.0026
10	-0.3263	0.4990	-0.2614	-0.3541	-0.6212	0.1140	0.2109	-0.0599	-0.0577	-0.0235	-0.0048	-0.0056
11	0.7114	-0.0267	0.3649	-0.3137	-0.2050	0.3794	-0.2175	0.1661	0.0229	0.0138	0.0012	-0.0036
12	0.6962	-0.0568	0.5867	0.0954	-0.1010	-0.1733	0.3041	0.1393	-0.0153	0.0793	0.0101	0.0021

7. CONTRIBUTIVE FACTOR OF PRINCIPAL COMPONENT AGAINST ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.6107	0.7472	0.7508	0.8719	0.9044	0.9605	0.9682	0.9809	0.9851	0.9999	1.0000	1.0000
2	0.2334	0.2867	0.6507	0.6507	0.8445	0.9321	0.9891	0.9975	0.9986	1.0000	1.0000	1.0000
3	0.0708	0.9111	0.9419	0.9605	0.9646	0.9661	0.9765	0.9765	0.9964	0.9979	0.9982	1.0000
4	0.6523	0.9128	0.9531	0.9639	0.9640	0.9641	0.9661	0.9925	0.9951	0.9962	0.9993	1.0000
5	0.2560	0.7530	0.9349	0.9412	0.9892	0.9909	0.9910	0.9917	0.9961	0.9968	0.9979	1.0000
6	0.5263	0.7691	0.8001	0.9135	0.9190	0.9257	0.9295	0.9416	0.9984	0.9997	1.0000	1.0000
7	0.0055	0.0890	0.2267	0.8783	0.9526	0.9933	0.9938	0.9942	0.9952	0.9995	1.0000	1.0000
8	0.6354	0.9120	0.9457	0.9507	0.9521	0.9521	0.9524	0.9799	0.9966	0.9967	0.9996	1.0000
9	0.0002	0.1326	0.8360	0.8954	0.8965	0.9516	0.9621	0.9888	0.9927	0.9998	1.0000	1.0000
10	0.1065	0.3554	0.4238	0.5492	0.9350	0.9480	0.9925	0.9961	0.9994	0.9999	1.0000	1.0000
11	0.5062	0.5069	0.6400	0.7384	0.7804	0.9244	0.9717	0.9993	0.9998	1.0000	1.0000	1.0000
12	0.4847	0.4880	0.8322	0.8413	0.8515	0.8815	0.9740	0.9934	0.9936	0.9999	1.0000	1.0000

8. SCORE OF PRINCIPAL COMPONENT

DATA	TOWNSHIP	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-4.4999	2.3194	-0.6572	-1.2030	-2.1732	-0.0466	0.6416	-0.0605	-0.4978	0.0459	-0.0548	-0.0191
2	PROME	-0.2054	-0.6046	-0.0969	-0.7882	-1.7502	-0.7507	-0.2034	0.4339	0.0579	-0.2841	0.0966	-0.0428
3	PADAUNG	-3.8725	2.1231	1.8251	1.2851	1.1519	-0.2183	-1.0923	0.4824	-0.7222	0.0923	0.0506	0.0843
4	PAUNGDE	-0.7918	-0.5338	1.3107	-0.7410	-0.9992	0.2601	0.2406	-0.0161	0.2644	-0.4244	0.1190	0.0727
5	THEGON	0.3012	-1.1950	0.8957	-0.7622	-0.1713	-0.4874	-0.6898	-0.3767	0.3798	0.2176	-0.0133	0.1070
6	SHWEDAUNG	-1.5657	-1.2604	-1.2242	0.4678	-1.3266	-0.5227	-0.5469	0.0916	0.4621	0.3795	-0.0871	0.0112
7	NATTALIN	0.3243	0.5983	2.5864	0.0760	0.0781	-0.0269	-0.1312	-0.2119	0.1139	0.0296	-0.0212	-0.1593
8	ZIGON	-0.4806	-3.5781	0.6241	-1.3475	0.4264	-0.2566	0.2125	-0.4942	-0.8544	0.0542	-0.0362	-0.0535
9	GYOBINGAUK	0.0862	-1.2526	1.5013	-0.4611	0.1473	-0.0786	0.1018	-0.1850	0.2708	0.2227	-0.0471	0.0115
10	MONYO	-1.8101	-2.3777	-2.2234	3.0949	-0.3638	1.0410	-0.0524	-0.4488	-0.0466	-0.1038	0.0892	-0.0090
11	OKPO	-0.2585	-0.4017	2.0463	-0.3826	0.0357	0.2606	0.2212	0.0203	0.3265	0.2207	-0.0351	-0.0118
12	MINHLA	0.4470	-1.6317	0.8759	-0.0383	0.4877	0.4055	0.8600	0.2012	-0.0280	0.0896	0.0411	0.1147
13	LETPADAN	0.5873	1.0114	1.6553	0.8235	0.6873	0.4589	0.7496	-0.1863	-0.0490	-0.1814	-0.1168	0.0532
14	THARRAWADDY	0.6571	-0.1336	0.8348	-0.5217	0.0235	1.3194	-0.1731	0.3656	0.1855	-0.2450	-0.0724	-0.0078
15	TAIKKYI	1.1901	2.6928	-0.8698	-0.7726	0.6572	0.6599	0.2496	0.1326	0.0021	0.3256	0.1568	-0.1092
16	HLEGU	0.9894	3.2205	-2.0724	-1.4085	0.0693	0.8540	-0.2112	-0.3395	0.1597	0.0554	-0.0411	0.1063
17	HMAWBI	-0.4107	-1.2450	-3.2680	-1.3987	1.6481	-0.6901	0.1282	0.5797	-0.0710	-0.1677	-0.1643	0.0021
18	KYANGIN	-3.0669	-0.3235	-0.1273	0.1073	1.1662	-0.3502	-0.1929	0.5094	0.5591	-0.1505	0.0715	0.0070
19	MYANAUNG	0.6797	1.7361	0.1246	1.0110	0.3569	-1.0239	-0.5506	-0.7047	0.1937	-0.2957	-0.1108	-0.0968
20	INGABU	1.1242	2.1482	-0.4303	0.9971	-0.0376	-0.5685	0.5095	-0.4333	-0.0646	-0.0994	-0.0721	0.0643
21	LEMYETHNA	-1.8010	-0.1778	-0.7062	0.4829	0.8429	-0.0848	0.8916	0.2592	0.2391	0.0748	0.0412	-0.1172
22	YEGYI	1.0192	0.9210	-0.9157	0.4256	0.0631	0.0146	-0.1365	-0.0959	0.1070	0.0739	0.0884	-0.0236
23	HENZADA	5.3465	0.3579	0.4964	1.5889	-1.0887	-0.5965	0.1795	1.0366	-0.2802	0.0770	-0.0383	0.0086
24	ZALUN	0.9494	-1.1547	-1.4416	1.2485	-0.3616	0.3001	0.1096	-0.1388	-0.1922	0.1363	-0.0565	0.0161
25	KYONPYAW	2.6950	-0.2393	-0.7368	-0.7353	0.5685	-1.1166	0.0699	-0.4878	-0.2115	-0.0318	0.2315	0.0494
26	DANUBYU	2.3667	-1.0193	-0.4868	-1.0478	-0.1377	1.2441	-1.1787	0.0681	-0.3040	-0.1113	-0.0187	-0.0582

9. RANK ORDER OF EACH STANDARDIZED CASE ORDER BY SIZE OF EACH PRINCIPAL COMPONENT SEPARATELY

NO.	COMP. NO.1	TOWNSHIP	COMP. NO.2	TOWNSHIP	COMP. NO.3	TOWNSHIP
1	5.3465	HENZADA	3.2205	HLEGU	2.5864	NATTALIN
2	2.6950	KYONPYAW	2.6928	TAIKKYI	2.0463	OKPO
3	2.3667	DANUBYU	2.3194	PAUKKAUNG	1.8553	LETPADAN
4	1.1901	TAIKKYI	2.1482	INGABU	1.8251	PADAUNG
5	1.1242	INGABU	2.1231	PADAUNG	1.5013	GYOBINGAUK
6	1.0192	YEGYI	1.7361	MYANAUNG	1.3107	PAUNGDE
7	0.9894	HLEGU	1.0114	LETPADAN	0.8957	THEGON
8	0.9494	ZALUN	0.9210	YEGYI	0.8759	MINHLA
9	0.6797	MYANAUNG	0.5983	NATTALIN	0.8348	THARRAWADDY
10	0.6571	THARRAWADDY	0.3579	HENZADA	0.8241	ZIGON
11	0.5873	LETPADAN	-0.1336	THARRAWADDY	0.4964	HENZADA
12	0.4470	MINHLA	-0.1778	LEMYETHNA	0.1246	MYANAUNG
13	0.3243	NATTALIN	-0.2393	KYONPYAW	-0.0969	PROME
14	0.3012	THEGON	-0.3235	KYANGIN	-0.1273	KYANGIN
15	0.0862	GYOBINGAUK	-0.4017	OKPO	-0.4303	INGABU
16	-0.2054	PROME	-0.5338	PAUNGDE	-0.4868	DANUBYU
17	-0.2585	OKPO	-0.6046	PROME	-0.6572	PAUKKAUNG
18	-0.4107	HMAWBI	-1.0193	DANUBYU	-0.7062	LEMYETHNA
19	-0.4806	ZIGON	-1.1547	ZALUN	-0.7368	KYONPYAW
20	-0.7918	PAUNGDE	-1.1950	THEGON	-0.8157	YEGYI
21	-1.5657	SHWEDAUNG	-1.2450	HMAWBI	-0.8698	TAIKKYI
22	-1.8010	LEMYETHNA	-1.2526	GYOBINGAUK	-1.2242	SHWEDAUNG
23	-1.8101	MONYO	-1.2604	SHWEDAUNG	-1.4416	ZALUN
24	-3.0669	KYANGIN	-1.6317	MINHLA	-2.0724	HLEGU
25	-3.8725	PADAUNG	-2.3777	MONYO	-2.2234	MONYO
26	-4.4999	PAUKKAUNG	-3.5781	ZIGON	-3.2880	HMAWBI

*** PRINCIPAL COMPONENT ANALYSIS ***

** PARAMETER **

NUMBER OF VARIABLES: 12

NUMBER OF DATA: 26

CONTRIBUTIVE FACTOR FOR DETERMINING NO. OF PRINCIPAL COMPONENT: 1.0000

** RESULTS **

** INDER = 0 **

1. MEAN AND STANDARD DEVIATION

VARIABLE NO	MEAN	STANDARD DEVIATION
1	125.735	45.8980
2	1894.462	486.7413
3	274.419	126.3862
4	111900.538	43782.6139
5	98108.346	90673.9518
6	0.397	0.1751
7	0.040	0.0537
8	3628.769	1380.3246
9	43.973	4.1476
10	23038.231	29431.5794
11	35126.885	10994.3160
12	2787.577	2074.8155

2. STANDARDIZED DATA

DATA NO.	TOWNSHIP	VARIABLE 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-1.1555	-1.2439	1.5586	-1.2294	1.4107	-1.7144	-0.5805	-1.3741	-1.0765	3.7801	-0.8637	-0.8423
2	PROME	0.4764	-1.2460	-0.6300	-0.4723	-0.7909	0.1079	-0.2827	-0.5265	-0.5239	1.0819	-0.5254	-0.8996
3	PADAUNG	-0.4518	-1.2460	2.7304	-1.2020	2.9086	-2.0000	-0.3571	-1.2734	0.5128	-0.7251	0.3168	0.6460
4	PAUNGDE	-0.4561	-1.0282	-0.3554	-0.7344	-0.1260	-0.4862	-0.6363	-0.2628	0.9709	0.7971	-0.7279	-0.8389
5	THEGON	-0.4234	-1.2460	-0.6529	-0.2005	-0.5676	0.5820	-0.5805	0.2631	0.2958	-0.6120	-0.3939	-0.8861
6	SHWEDAUNG	-0.4278	-1.2645	-0.7336	-0.7277	-0.8350	-0.4234	1.1874	-1.0409	-0.9820	0.4215	-0.6746	0.8735
7	NATTALIN	0.1060	-1.0282	0.5023	0.1237	1.0449	-0.3777	-0.7107	0.7304	1.4049	-0.4550	0.3271	-0.9020
8	ZIGON	-1.4714	-0.8104	-1.6918	-1.4813	-0.9874	2.0044	-0.6735	-1.1228	1.2602	-0.7594	-1.7741	-1.2681
9	GYOBINGAUK	-0.7110	-0.8104	-0.6672	-0.4961	-0.1424	0.2793	-0.5060	0.1262	0.9709	-0.6359	-0.5686	-1.1353
10	MONYO	-0.5084	0.3586	-0.9203	-0.6199	-1.0820	-0.6405	3.5879	-1.6291	0.4887	-0.5231	-0.1747	1.4239
11	OKPO	-0.7219	-0.8104	-0.1180	-0.5027	0.4784	-0.3491	-0.6363	0.2146	1.1638	-0.3020	-0.4681	-0.9531
12	MINHLA	-0.6369	0.3586	-0.8634	-0.6039	-0.4819	0.4049	-0.0036	-0.2136	1.0914	-0.6822	-0.3007	0.3920
13	LETPADAN	0.2803	0.3915	0.7357	0.2589	1.0551	-0.5890	-0.1524	0.6920	1.5254	-0.4283	0.7215	0.8687
14	THARRAWADDY	-0.2034	0.4223	-0.1513	-0.1102	0.0652	-0.0692	-0.2455	0.2979	0.7539	-0.0402	-0.3931	0.1462
15	TAIKKYI	0.2738	1.7145	1.2057	1.4830	0.8063	-0.0921	-0.7107	1.0688	-1.1267	0.7276	0.7869	-0.1935
16	HLEGU	0.2956	1.7762	1.3244	1.6814	0.3872	-0.0121	-0.7479	1.3969	-1.8741	1.6672	0.9351	-1.1522
17	HMAWBI	-0.5542	1.8378	-1.1870	-0.6037	-1.0625	1.1533	-0.7293	-0.9489	-2.2840	-0.5230	-0.8581	-1.2842
18	KYANGIN	-1.1707	-0.3030	0.0798	-1.3765	0.7364	-1.4231	-0.5432	-1.3597	-0.3552	-0.7220	-1.1596	-0.8220
19	MYANAUNG	1.3174	-0.3030	0.8639	1.1474	0.6939	-0.3491	-0.0222	1.1238	-0.1864	-0.4575	1.3245	1.1145
20	INGABU	1.3261	0.6400	1.0095	1.2912	0.4811	-0.3320	0.3314	1.1861	-0.3793	0.4450	3.1509	1.7777
21	LEMYETHNA	-0.8526	0.6400	-0.1505	-0.6864	0.4221	-0.8975	0.1639	-0.9061	-0.2828	-0.1152	-0.7561	-0.2283
22	YEGYI	0.5725	0.6400	0.3353	0.9844	-0.0843	0.0279	0.3872	0.5725	-0.5963	0.0148	0.2541	0.4480
23	HENZADA	3.3131	0.6400	-0.2533	1.8128	-1.0820	1.1533	1.3176	1.7077	-0.0176	-0.7362	1.3614	1.0175
24	ZALUN	0.4263	0.6400	-0.7123	0.3416	-1.0820	0.6049	1.8015	-0.1983	-0.1623	-0.2542	-0.3079	1.4254
25	KYONPYAW	0.9557	0.6400	-0.5524	1.2893	-1.0820	1.7531	-0.7479	1.0144	-0.5963	-0.5989	0.3214	-0.0384
26	DANUBYU	0.3021	0.6400	-0.7059	0.6332	-1.0820	1.6845	0.0895	0.4617	0.0065	-0.3652	0.4468	1.3304

3. CORRELATION COEFFICIENT MATRIX

VARIABLES	VARIABLES 1	2	3	4	5	6	7	8	9	10	11	12
1	1.0000	0.3466	0.1603	0.8427	-0.1766	0.2887	0.2499	0.7529	-0.1629	-0.1116	0.7691	0.5247
2	0.3466	1.0000	-0.0032	0.6062	-0.2291	0.3324	0.1257	0.3973	-0.4830	-0.0774	0.3823	0.2314
3	0.1603	-0.0032	1.0000	0.2308	0.8913	-0.6795	-0.2407	0.2204	-0.1511	0.3998	0.4996	0.1307
4	0.8427	0.6062	0.2308	1.0000	-0.1313	0.3433	0.0754	0.8969	-0.2965	0.0008	0.8004	0.3900
5	-0.1766	-0.2291	0.8913	-0.1313	1.0000	-0.7881	-0.3821	-0.0150	0.1257	0.2456	0.2079	-0.0750
6	0.2887	0.3324	-0.6795	0.3433	-0.7881	1.0000	-0.0332	0.3486	-0.0322	-0.3664	-0.0171	-0.0302
7	0.2499	0.1257	-0.2407	0.0754	-0.3821	-0.0332	1.0000	-0.2125	0.0273	-0.1691	0.1345	0.6946
8	0.7529	0.3973	0.2204	0.8969	-0.0150	0.3486	-0.2125	1.0000	-0.0050	-0.0735	0.7333	0.1932
9	-0.1629	-0.4830	-0.1511	-0.2965	0.1257	-0.0322	0.0273	-0.0050	1.0000	-0.4492	-0.1233	0.0614
10	-0.1116	-0.0774	0.3998	0.0008	0.2456	-0.3664	-0.1691	-0.0735	-0.4492	1.0000	0.0017	-0.2173
11	0.7691	0.3823	0.4996	0.8004	0.2079	-0.0171	0.1345	0.7333	-0.1233	0.0017	1.0000	0.5911
12	0.5247	0.2314	0.1307	0.3900	-0.0750	-0.0302	0.6946	0.1932	0.0614	-0.2173	0.5911	1.0000

4. EIGEN VALUE

COMPONENT NO.	EIGENVALUE	CUMULATIVE CONTRIBUTION
1	4.2047	0.3504
2	2.9649	0.5975
3	1.7979	0.7473
4	1.4603	0.8690
5	0.7084	0.9280
6	0.3334	0.9558
7	0.2268	0.9747
8	0.1175	0.9845
9	0.0869	0.9917
10	0.0829	0.9987
11	0.0101	0.9995
12	0.0061	1.0000

5. EIGENVECTORS

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.4396	-0.0025	0.0648	0.0626	-0.2903	-0.3895	-0.2862	-0.4016	-0.2580	-0.4995	-0.0076	-0.0578
2	0.3045	-0.0850	-0.2189	-0.2722	0.6686	0.4390	-0.1003	-0.1262	-0.1537	-0.2928	-0.0042	0.0537
3	0.0919	0.5569	0.0413	0.0038	0.1082	-0.0796	0.0687	-0.3582	-0.1658	0.3538	-0.2100	0.5760
4	0.4680	0.0371	-0.1399	0.0384	-0.0590	0.0920	-0.1863	-0.0302	0.2795	0.4059	-0.5281	-0.4350
5	-0.0845	0.5374	0.0883	0.1735	0.2539	-0.0232	0.0236	-0.1980	-0.0779	0.0754	0.4343	-0.6008
6	0.1679	-0.4587	-0.2692	0.1597	-0.0648	-0.0009	0.4696	-0.3394	-0.3657	0.3716	0.2144	-0.0754
7	0.1125	-0.1935	0.5363	-0.4133	-0.0919	0.1421	-0.4137	-0.0243	-0.1856	0.4069	0.3017	0.0112
8	0.4043	0.0628	-0.1914	0.3532	-0.1356	0.2002	-0.1649	0.1013	0.4230	0.0477	0.5443	0.3128
9	-0.1238	-0.0709	0.3837	0.6031	-0.0947	0.5740	-0.0749	-0.1378	-0.1967	-0.1180	-0.2301	0.0092
10	-0.0535	0.3017	-0.2730	-0.4111	-0.5894	0.4985	0.1481	-0.0942	-0.0934	-0.1331	0.0421	-0.0872
11	0.4208	0.2106	0.1222	0.0741	-0.0282	-0.0235	0.2422	0.6874	-0.4743	-0.0158	-0.0177	-0.0127
12	0.2827	-0.0142	0.5343	-0.1764	0.0276	0.0378	0.6025	-0.1673	0.4228	-0.1767	-0.0037	-0.0154

6. CORRELATION COEFFICIENT BETWEEN COMPONENT AND ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.9013	-0.0044	0.0869	0.0756	-0.2443	-0.2249	-0.1363	-0.1377	-0.0761	-0.1439	-0.0008	-0.0045
2	0.6245	-0.1464	-0.2935	-0.3289	0.5627	0.2535	-0.0478	-0.0433	-0.0453	-0.0843	-0.0004	0.0042
3	0.1885	0.9589	0.0553	0.0046	0.0911	-0.0460	0.0327	-0.1228	-0.0489	0.1019	-0.0211	0.0449
4	0.9596	0.0638	-0.1876	0.0464	-0.0497	0.0531	-0.0887	-0.0103	0.0824	0.1169	-0.0530	-0.0339
5	-0.1732	0.9254	0.1184	0.2097	0.2137	-0.0134	0.0113	-0.0679	-0.0230	0.0217	0.0436	-0.0469
6	0.3442	-0.7899	-0.3610	0.1930	-0.0545	-0.0005	0.2237	-0.1163	-0.1078	0.1070	0.0215	-0.0059
7	0.2308	-0.3332	0.7191	-0.4994	-0.0773	0.0820	-0.1970	-0.0083	-0.0547	0.1172	0.0303	0.0009
8	0.8290	0.1081	-0.2566	0.4268	-0.1142	0.1156	-0.0785	0.0347	0.1247	0.0137	0.0546	0.0244
9	-0.2539	-0.1221	0.5144	0.7288	-0.0797	0.3314	-0.0356	-0.0472	-0.0580	-0.0340	-0.0231	0.0007
10	-0.1037	0.5195	-0.3661	-0.4968	-0.4961	0.2879	0.0705	-0.0323	-0.0275	-0.0383	0.0042	-0.0068
11	0.8628	0.3627	0.1638	0.0896	-0.0238	-0.0136	0.1154	0.2356	-0.1398	-0.0045	-0.0018	-0.0010
12	0.5797	-0.0244	0.7164	-0.2131	0.0232	0.0218	0.2869	-0.0573	0.1247	-0.0509	-0.0004	-0.0012

7. CONTRIBUTIVE FACTOR OF PRINCIPAL COMPONENT AGAINST ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.8124	0.8124	0.8200	0.8257	0.8854	0.9360	0.9545	0.9735	0.9793	1.0000	1.0000	1.0000
2	0.3899	0.4114	0.4375	0.6057	0.9224	0.9867	0.9869	0.9908	0.9929	1.0000	1.0000	1.0000
3	0.0355	0.9551	0.9582	0.9582	0.9665	0.9686	0.9697	0.9848	0.9872	0.9975	0.9980	1.0000
4	0.9209	0.9250	0.9602	0.9623	0.9648	0.9676	0.9755	0.9756	0.9824	0.9960	0.9988	1.0000
5	0.0300	0.8863	0.9003	0.9443	0.9900	0.9902	0.9903	0.9949	0.9954	0.9959	0.9978	1.0000
6	0.1185	0.7424	0.8727	0.9093	0.9129	0.9129	0.9629	0.9764	0.9881	0.9995	1.0000	1.0000
7	0.0533	0.1643	0.6813	0.9308	0.9367	0.9435	0.9823	0.9824	0.9854	0.9991	1.0000	1.0000
8	0.6872	0.6989	0.7647	0.9469	0.9599	0.9733	0.9795	0.9807	0.9962	0.9964	0.9994	1.0000
9	0.0645	0.0794	0.3440	0.8752	0.8816	0.9914	0.9927	0.9949	0.9983	0.9995	1.0000	1.0000
10	0.0120	0.2813	0.4159	0.6627	0.9088	0.9917	0.9967	0.9977	0.9985	0.9999	1.0000	1.0000
11	0.7444	0.8760	0.9028	0.9108	0.9114	0.9116	0.9249	0.9804	1.0000	1.0000	1.0000	1.0000
12	0.3360	0.3366	0.8498	0.8953	0.8958	0.8963	0.9786	0.9819	0.9974	1.0000	1.0000	1.0000

8. SCORE OF PRINCIPAL COMPONENT

DATA	TOWNSHIP	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-3.0167	3.5487	-1.0298	-2.1693	-1.6708	0.5321	0.4101	-0.3829	-0.1564	-0.0520	0.0837	-0.0377
2	PROME	-1.0772	-0.4508	-0.8473	-0.4817	-1.7201	-0.6362	-0.2008	0.0389	-0.2362	-0.3624	-0.1300	-0.0313
3	PADAUNG	-1.7346	3.8553	2.1504	0.6752	1.1261	-1.1205	0.4729	-0.5131	-0.3584	0.2557	-0.0531	0.1095
4	PAUNGDE	-1.3450	0.1545	-0.2700	0.6439	-1.0214	0.4875	-0.2151	0.0727	0.0491	-0.4177	-0.1965	0.0717
5	THEGON	-0.9529	-0.9832	-0.5630	1.1868	-0.6138	-0.5253	-0.0467	0.4171	0.2144	0.4231	0.0143	0.1164
6	SHWEDAUNG	-1.2067	-0.8342	1.0893	-1.7538	-1.0225	-0.7216	0.2950	0.2767	0.6252	0.1583	0.1377	0.0213
7	NATTALIN	-0.3658	1.1344	0.1296	2.1836	-0.3141	0.0378	-0.5317	0.1410	-0.1908	0.2092	0.0437	-0.1423
8	ZIGON	-3.0783	-2.9885	-0.7677	1.2636	-0.0340	0.2540	0.6314	-0.3444	-0.5157	0.3231	0.0530	-0.0851
9	GYOBINGAUK	-1.4463	-0.7824	-0.3400	1.4332	-0.1356	0.0957	-0.3409	0.3254	-0.0058	0.2278	0.0890	0.0165
10	MONYO	-0.5443	-1.9103	3.3581	-2.3299	0.3157	0.6186	-0.6457	0.2902	-0.4282	0.3878	-0.1340	-0.0153
11	OKPO	-1.4885	0.2815	-0.0874	1.4811	-0.0871	0.3227	-0.3708	0.2163	0.1074	0.0884	0.0881	0.0055
12	MINHLA	-0.6252	-1.3416	0.5942	0.5904	0.5656	0.6945	0.3957	0.1161	0.0407	-0.3375	-0.0122	0.0808
13	LETPADAN	0.9699	1.2103	1.1803	1.3872	0.5554	0.8388	0.0676	-0.1675	0.1218	-0.3359	0.0913	0.0326
14	THARRAWADDY	-0.1653	-0.1412	0.0696	0.4908	0.3021	0.7172	-0.0220	-0.2621	0.2774	-0.3300	0.0225	0.0649
15	TAIKKYI	2.0929	1.7280	-1.5432	-0.4778	0.3911	0.4712	-0.0841	-0.1458	0.1341	0.2361	-0.0713	-0.1062
16	HLEGU	2.2360	1.9433	-2.8569	-1.0708	0.2608	0.5684	-0.4629	0.1559	-0.1124	0.4585	0.0136	0.1501
17	HMAWBI	-0.6712	-2.0151	-2.5410	-1.5962	1.6614	-0.8084	0.0919	0.1636	-0.3542	-0.3404	0.1373	0.0113
18	KYANGIN	-2.7933	0.6652	0.0834	-0.2569	1.2100	-0.7427	-0.4311	0.1914	0.2790	-0.3147	-0.0942	0.0165
19	MYANAUNG	2.3578	1.2923	0.7657	0.6603	-0.2301	-0.7274	0.1137	0.0533	0.3597	0.0344	0.0315	-0.1290
20	INGABU	3.7469	1.7730	0.9571	-0.2169	-0.2379	0.0739	0.8364	0.9945	-0.4324	-0.2424	0.0205	-0.0214
21	LEMYETHNA	-1.3906	0.2177	0.1433	-0.8514	1.0826	0.1842	-0.3491	0.0299	0.1648	-0.2706	0.0193	-0.1516
22	YEGYI	1.5754	0.1639	-0.0998	-0.4869	0.1273	-0.0694	-0.2822	-0.2644	0.2992	0.1690	-0.0686	-0.0244
23	HENZADA	4.5021	-1.3436	0.6884	0.3703	-0.9453	-0.6400	-0.8430	-0.5741	-0.4073	-0.3328	0.1177	0.0516
24	ZALUN	1.0993	-1.8097	1.2870	-1.3104	-0.0325	0.2851	0.0059	-0.4658	0.2544	0.1590	0.0855	0.0160
25	KYONPYAW	2.1095	-1.5641	-1.4906	0.6097	-0.0433	-0.4582	0.3348	-0.1996	0.1227	0.1288	-0.2358	-0.0297
26	DANUBYU	1.7128	-1.8028	0.0399	0.0261	0.0104	0.2679	1.1906	-0.1632	0.1481	0.0775	-0.0511	0.0091

9. RANK ORDER OF EACH STANDARDIZED CASE ORDER BY SIZE OF EACH PRINCIPAL COMPONENT SEPARATELY

NO.	COMP. NO.1	TOWNSHIP	COMP. NO.2	TOWNSHIP	COMP. NO.3	TOWNSHIP
1	4.5021	HENZADA	3.8553	PADAUNG	3.3581	MONYO
2	3.7469	INGABU	3.5487	PAUKKAUNG	2.1504	PADAUNG
3	2.3578	MYANAUNG	1.9433	HLEGU	1.2870	ZALUN
4	2.2360	HLEGU	1.7730	INGABU	1.1803	LETPADAN
5	2.1095	KYONPYAW	1.7280	TAIKKYI	1.0893	SHWEDAUNG
6	2.0929	TAIKKYI	1.2923	MYANAUNG	0.9571	INGABU
7	1.7128	DANUBYU	1.2103	LETPADAN	0.7657	MYANAUNG
8	1.5754	YEGYI	1.1344	NATTALIN	0.6884	HENZADA
9	1.0993	ZALUN	0.6652	KYANGIN	0.5942	MINHLA
10	0.9699	LETPADAN	0.2815	OKPO	0.1433	LEMYETHNA
11	-0.1659	THARRAWADDY	0.2177	LEMYETHNA	0.1296	NATTALIN
12	-0.3658	NATTALIN	0.1639	YEGYI	0.0834	KYANGIN
13	-0.5443	MONYO	0.1545	PAUNGDE	0.0696	THARRAWADDY
14	-0.6252	MINHLA	-0.1412	THARRAWADDY	0.0399	DANUBYU
15	-0.6712	HMAWBI	-0.4508	PROME	-0.0874	OKPO
16	-0.9529	THEGON	-0.7824	GYOBINGAUK	-0.0998	YEGYI
17	-1.0772	PROME	-0.8342	SHWEDAUNG	-0.2700	PAUNGDE
18	-1.2067	SHWEDAUNG	-0.9832	THEGON	-0.3400	GYOBINGAUK
19	-1.3906	LEMYETHNA	-1.3416	MINHLA	-0.5630	THEGON
20	-1.4463	GYOBINGAUK	-1.3436	HENZADA	-0.7677	ZIGON
21	-1.4885	OKPO	-1.5641	KYONPYAW	-0.8473	PROME
22	-1.7346	PADAUNG	-1.8028	DANUBYU	-1.0298	PAUKKAUNG
23	-1.8450	PAUNGDE	-1.8097	ZALUN	-1.4906	KYONPYAW
24	-2.7933	KYANGIN	-1.9109	MONYO	-1.5432	TAIKKYI
25	-3.0167	PAUKKAUNG	-2.0151	HMAWBI	-2.5410	HMAWBI
26	-3.0783	ZIGON	-2.9885	ZIGON	-2.8568	HLEGU

*** PRINCIPAL COMPONENT ANALYSIS ***

** PARAMETER **

NUMBER OF VARIABLES: 12

NUMBER OF DATA: 26

CONTRIBUTIVE FACTOR FOR DETERMINING NO. OF PRINCIPAL COMPONENT: 1.0000

** RESULTS **

** INDER = 0 **

1. MEAN AND STANDARD DEVIATION

VARIABLE NO	MEAN	STANDARD DEVIATION
1	125.735	45.8980
2	1894.462	486.7413
3	274.419	126.3862
4	0.468	0.1950
5	0.300	0.2116
6	0.397	0.1751
7	0.040	0.0537
8	3628.769	1380.3246
9	43.973	4.1476
10	23038.231	29431.5794
11	35126.885	10994.3160
12	2787.577	2074.8155

Model No. 3

2. STANDARDIZED DATA

DATA NO.	TOWNSHIP	VARIABLE 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-1.1555	-1.2439	1.5586	-1.7694	0.8470	-1.7144	-0.5805	-1.3741	-1.0785	3.7801	-0.8637	-0.8423
2	PROME	0.4764	-1.2460	-0.6300	-0.0002	-0.7743	0.1079	-0.2827	-0.5265	-0.5239	1.0819	-0.5254	-0.8936
3	PADAUNG	-0.4518	-1.2460	2.7304	-1.9079	1.3433	-2.0000	-0.3571	-1.2734	0.5128	-0.7251	0.3168	0.6460
4	PAUNGDE	-0.4561	-1.0282	-0.3554	-0.6207	0.3649	-0.4862	-0.6363	-0.2628	0.9709	0.7971	-0.7279	-0.8389
5	THEGON	-0.4234	-1.2460	-0.6529	0.3536	-0.2685	0.5820	-0.5805	0.2631	0.2958	-0.6120	-0.3939	-0.8861
6	SHWEDAUNG	-0.4278	-1.2645	-0.7336	-0.1387	-0.8641	-0.4234	1.1874	-1.0409	-0.9820	0.4215	-0.6746	0.8735
7	NATTALIN	0.1060	-1.0282	0.5023	-0.6207	1.2819	-0.3777	-0.7107	0.7304	1.4049	-0.4550	0.3271	-0.9020
8	ZIGON	-1.4714	-0.8104	-1.6918	1.5793	-0.7459	2.0044	-0.6735	-1.1228	1.2602	-0.7594	-1.7741	-1.2881
9	GYOBINGAUK	-0.7110	-0.8104	-0.6672	0.0306	0.7005	0.2793	-0.5060	0.1262	0.9709	-0.6359	-0.5686	-1.1353
10	MONYO	-0.5084	0.3586	-0.9203	0.3485	-1.4171	-0.6405	3.5879	-1.8291	0.4887	-0.5231	-0.1747	1.4239
11	OKPO	-0.7219	-0.8104	-0.1180	-0.6258	1.1590	-0.3491	-0.6363	0.2146	1.1638	-0.3020	-0.4681	-0.9531
12	MINHLA	-0.6369	0.3586	-0.8634	0.2511	0.1380	0.4049	-0.0036	-0.2136	1.0914	-0.6822	-0.3007	0.3920
13	LETPADAN	0.2803	0.3915	0.7357	-0.6822	1.0739	-0.5890	-0.1524	0.8920	1.5254	-0.4283	0.7215	0.8687
14	THARRAWADDY	-0.2034	0.4223	-0.1513	-0.2515	0.5067	-0.0692	-0.2455	0.2979	0.7539	-0.0402	-0.3931	0.1462
15	TAIKKYI	0.2738	1.7145	1.2057	-0.2771	0.4783	-0.0921	-0.7107	1.0688	-1.1267	0.7276	0.7869	-0.1935
16	HLEGU	0.2956	1.7762	1.3244	-0.2463	0.0104	-0.0121	-0.7479	1.3969	-1.8741	1.6672	0.9351	-1.1522
17	HMAWBI	-0.5542	1.8378	-1.1870	1.1229	-1.3509	1.1533	-0.7293	-0.9489	-2.2840	-0.5230	-0.8581	-1.2842
18	KYANGIN	-1.1707	-0.3030	0.0798	-1.4720	1.3244	-1.4231	-0.5432	-1.3597	-0.3552	-0.7220	-1.1596	-0.8220
19	MYANAUNG	1.3174	-0.3030	0.8639	-0.2310	0.5681	-0.3491	-0.0222	1.1238	-0.1864	-0.4575	1.3245	1.1145
20	INGABU	1.3261	0.6400	1.0095	-0.2515	0.2514	-0.3320	0.3314	1.1861	-0.3793	0.4450	3.1509	1.7777
21	LEMYETHNA	-0.8526	0.6400	-0.1505	-0.7592	1.1070	-0.8975	0.1639	-0.9061	-0.2828	-0.1152	-0.7561	-0.2283
22	YEGYI	0.6725	0.6400	0.3353	0.1075	-0.0653	0.0279	0.3872	0.5725	-0.5963	0.0148	0.2541	0.4480
23	HENZADA	3.3131	0.6400	-0.2533	1.6459	-1.4171	1.1533	1.3176	1.7077	-0.0176	-0.7362	1.3614	1.0176
24	ZALUN	0.4263	0.6400	-0.7123	1.1280	-1.4171	0.6049	1.8015	-0.1983	-0.1623	-0.2542	-0.3079	1.4254
25	KYONPYAW	0.9557	0.6400	-0.5524	1.8203	-1.4171	1.7531	-0.7479	1.0144	-0.5963	-0.5989	0.3214	-0.0384
26	DANUBYU	0.3021	0.6400	-0.7059	1.4664	-1.4171	1.6845	0.0895	0.4617	0.0065	-0.3652	0.4468	1.3304

3. CORRELATION COEFFICIENT MATRIX

VARIABLES	VARIABLES 1	2	3	4	5	6	7	8	9	10	11	12
1	1.0000	0.3466	0.1603	0.3925	-0.3425	0.2887	0.2499	0.7529	-0.1629	-0.1116	0.7691	0.5247
2	0.3466	1.0000	-0.0032	0.3841	-0.3109	0.3324	0.1257	0.3973	-0.4830	-0.0774	0.3823	0.2314
3	0.1603	-0.0032	1.0000	-0.6993	0.6145	-0.6795	-0.2407	0.2204	-0.1511	0.3998	0.4996	0.1307
4	0.3925	0.3841	-0.6993	1.0000	-0.8597	0.9539	0.2432	0.2851	-0.0826	-0.4021	0.0401	0.1673
5	-0.3425	-0.3109	0.6145	-0.8597	1.0000	-0.7284	-0.4828	-0.0112	0.3338	0.1378	0.0091	-0.2791
6	0.2887	0.3324	-0.6795	0.9539	-0.7284	1.0000	-0.0332	0.3466	-0.0322	-0.3664	-0.0171	-0.0302
7	0.2499	0.1257	-0.2407	0.2432	-0.4828	-0.0332	1.0000	-0.2125	0.0273	-0.1681	0.1345	0.6946
8	0.7529	0.3973	0.2204	0.2851	-0.0112	0.3486	-0.2125	1.0000	-0.0050	-0.0735	0.7333	0.1932
9	-0.1629	-0.4830	-0.1511	-0.0826	0.3338	-0.0322	0.0273	-0.0050	1.0000	-0.4492	-0.1233	0.0614
10	-0.1116	-0.0774	0.3998	-0.4021	0.1378	-0.3664	-0.1681	-0.0735	-0.4492	1.0000	0.0017	-0.2173
11	0.7691	0.3823	0.4996	0.0401	0.0091	-0.0171	0.1345	0.7333	-0.1233	0.0017	1.0000	0.5911
12	0.5247	0.2314	0.1307	0.1673	-0.2791	-0.0302	0.6946	0.1932	0.0614	-0.2173	0.5911	1.0000

4. EIGEN VALUE

COMPONENT NO.	EIGENVALUE	CUMULATIVE CONTRIBUTION
1	4.0711	0.3393
2	2.9773	0.5874
3	1.7677	0.7347
4	1.5738	0.8658
5	0.7182	0.9257
6	0.3391	0.9539
7	0.2367	0.9737
8	0.1273	0.9843
9	0.1026	0.9928
10	0.0582	0.9977
11	0.0251	0.9998
12	0.0028	1.0000

5. EIGENVECTORS

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.3368	0.3468	0.0139	-0.0912	-0.2952	-0.2807	0.4478	0.2071	-0.3340	-0.4639	0.1139	0.0933
2	0.2779	0.1624	-0.2555	0.1805	0.7208	0.4120	0.0811	0.1741	-0.0762	-0.2381	-0.0979	0.0143
3	-0.2285	0.4772	-0.0373	0.0311	0.0403	-0.1950	-0.3124	0.7064	0.0703	0.2641	0.0779	0.0281
4	0.4461	-0.2212	-0.1006	-0.0584	-0.0852	0.0175	-0.1437	0.1894	0.0552	0.0713	0.3987	-0.7123
5	-0.4015	0.2049	0.0265	-0.2992	0.2417	0.1369	0.1523	-0.2327	-0.1633	0.0196	0.7244	-0.0177
6	0.3920	-0.2432	-0.2383	-0.1968	-0.0954	0.0754	-0.3127	0.0778	0.0284	0.0806	0.3423	0.6698
7	0.2067	-0.0050	0.5355	0.3935	-0.0157	0.2052	0.4258	0.1393	0.2654	0.3445	0.2352	0.1678
8	0.2428	0.3469	-0.2266	-0.3908	-0.1222	0.2333	0.2296	-0.1610	-0.1359	0.6119	-0.2686	-0.0600
9	-0.0836	-0.1176	0.4319	-0.5555	-0.1134	0.5029	-0.0629	0.3302	0.0621	-0.2646	-0.1756	-0.0249
10	-0.1938	0.1611	-0.3117	0.4180	-0.5349	0.5798	-0.0853	-0.0059	-0.0739	-0.1348	0.1023	-0.0298
11	0.2004	0.4985	0.0483	-0.0960	-0.0386	-0.0200	-0.1901	-0.3313	0.6971	-0.2519	0.0414	-0.0218
12	0.2383	0.2585	0.4914	0.1615	0.0344	0.0519	-0.5218	-0.2600	-0.3129	0.0407	-0.0046	-0.0185

6. CORRELATION COEFFICIENT BETWEEN COMPONENT AND ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.6796	0.5985	0.0185	-0.1144	-0.2501	-0.1634	0.2179	0.0739	-0.1070	-0.1119	0.0181	0.0043
2	0.5608	0.2803	-0.3397	0.2264	0.6109	0.2399	0.0395	0.0621	-0.0244	-0.0575	-0.0155	0.0008
3	-0.4611	0.8234	-0.0497	0.0390	0.0341	-0.1136	-0.1520	0.2520	0.0225	0.0637	0.0123	0.0015
4	0.9001	-0.3817	-0.1338	-0.0732	-0.0722	0.0102	-0.0699	0.0676	0.0177	0.0172	0.0632	-0.0378
5	-0.8101	0.3535	0.0352	-0.3753	0.2049	0.0797	0.0741	-0.0830	-0.0523	0.0047	0.1149	-0.0009
6	0.7909	-0.4196	-0.3169	-0.2469	-0.0809	0.0439	-0.1522	0.0278	0.0091	0.0194	0.0543	0.0355
7	0.4170	-0.0086	0.7119	0.4937	-0.0133	0.1195	0.2072	0.0497	0.0850	0.0831	0.0373	0.0089
8	0.4900	0.5987	-0.3013	-0.4902	-0.1035	0.1359	0.1117	-0.0574	-0.0435	0.1477	-0.0426	-0.0032
9	-0.1686	-0.2029	0.5742	-0.6969	-0.0961	0.2928	-0.0306	0.1178	0.0199	-0.0639	-0.0278	-0.0013
10	-0.3911	0.2780	-0.4144	0.5243	-0.4533	0.3376	-0.0415	-0.0021	-0.0237	-0.0325	0.0162	-0.0016
11	0.4043	0.8602	0.0643	-0.1229	-0.0327	-0.0117	-0.0925	-0.1182	0.2233	-0.0608	0.0066	-0.0012
12	0.4809	0.4461	0.6533	0.2026	0.0292	0.0302	-0.2539	-0.0928	-0.1643	0.0098	-0.0007	-0.0010

7. CONTRIBUTIVE FACTOR OF PRINCIPAL COMPONENT AGAINST ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.4619	0.8200	0.8204	0.8335	0.8960	0.9227	0.9702	0.9757	0.9871	0.9996	1.0000	1.0000
2	0.3145	0.3930	0.5085	0.5597	0.9329	0.9904	0.9920	0.9959	0.9965	0.9998	1.0000	1.0000
3	0.2126	0.8906	0.8931	0.8946	0.8958	0.9087	0.9318	0.9953	0.9958	0.9998	1.0000	1.0000
4	0.8103	0.9559	0.9738	0.9792	0.9844	0.9845	0.9894	0.9940	0.9943	0.9946	0.9986	1.0000
5	0.6563	0.7812	0.7825	0.9233	0.9653	0.9717	0.9772	0.9840	0.9868	0.9868	1.0000	1.0000
6	0.6255	0.8016	0.9020	0.9629	0.9695	0.9714	0.9946	0.9953	0.9954	0.9958	0.9987	1.0000
7	0.1739	0.1740	0.6808	0.9245	0.9247	0.9390	0.9819	0.9844	0.9916	0.9985	0.9999	1.0000
8	0.2401	0.5984	0.6892	0.9295	0.9402	0.9587	0.9712	0.9745	0.9764	0.9982	1.0000	1.0000
9	0.0284	0.0696	0.3993	0.8850	0.8942	0.9799	0.9809	0.9947	0.9951	0.9992	1.0000	1.0000
10	0.1529	0.2302	0.4020	0.6769	0.8824	0.9964	0.9981	0.9981	0.9987	0.9997	1.0000	1.0000
11	0.1635	0.9034	0.9076	0.9227	0.9238	0.9239	0.9324	0.9464	0.9963	1.0000	1.0000	1.0000
12	0.2313	0.4303	0.8571	0.8981	0.8989	0.8999	0.9643	0.9729	0.9999	1.0000	1.0000	1.0000

8. SCORE OF PRINCIPAL COMPONENT

DATA	TOWNSHIP	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-4.3625	0.7364	-1.2464	2.5528	-1.6923	0.6467	-0.3993	0.2466	-0.1781	-0.0858	0.2095	-0.0508
2	PROME	-0.3607	-0.9625	-0.7607	0.6665	-1.7228	-0.4753	0.4262	-0.1007	0.0001	-0.4282	-0.1369	0.0881
3	PADAUNG	-3.3647	1.8353	1.7919	-0.1534	0.5242	-1.4253	-0.8642	0.8446	0.1094	-0.0374	-0.0850	0.0189
4	PAUNGDE	-1.7490	-0.8180	-0.1000	-0.5503	-0.9286	0.5056	0.2359	-0.0358	-0.1109	-0.3089	-0.3229	-0.0647
5	THEGON	-0.0983	-1.4003	-0.3509	-1.1172	-0.6945	-0.5557	0.0236	-0.2520	0.3240	0.4160	-0.1654	-0.0103
6	SHWEDAUNG	-0.1428	-1.0414	1.1493	1.9408	-0.9209	-0.6002	-0.0793	-0.6825	-0.2447	0.4254	-0.0658	0.0239
7	NATTALIN	-1.4527	0.5495	0.2069	-2.1660	-0.3911	-0.0014	0.4337	0.1288	0.3475	0.0514	0.0648	0.0010
8	ZIGON	0.4229	-4.3131	-0.4506	-1.2060	-0.2890	0.2477	-0.7133	0.4181	0.2323	-0.0673	0.3319	0.0424
9	GYOBINGAUK	-0.8868	-1.3750	-0.0963	-1.5496	-0.0557	0.1108	0.3463	-0.1779	0.2894	0.2139	0.1548	-0.0081
10	MONYO	1.2744	-1.2821	3.4167	2.4958	0.5076	0.5632	0.4353	0.2992	0.7280	0.0126	-0.0896	-0.0279
11	OKPO	-1.7619	-0.5652	0.0948	-1.5406	-0.0105	0.3026	0.3406	-0.1234	0.1199	0.1707	0.0009	-0.0025
12	MINHLA	0.3193	-1.0613	0.7222	-0.7563	0.6774	0.6778	-0.3366	-0.2364	-0.1368	-0.2017	-0.0554	0.0160
13	LETPADAN	-0.4391	1.6722	1.0841	-1.4630	0.5546	0.7560	-0.1368	0.0975	-0.2794	-0.1030	-0.2060	-0.0112
14	THARRAWADDY	-0.3368	-0.0466	0.1422	-0.6197	0.4325	0.7107	0.0436	0.0129	-0.4783	-0.0511	-0.1244	0.0358
15	TAIKKYI	0.1188	2.0968	-1.8100	0.3374	0.9338	0.3811	-0.0704	0.1780	-0.0431	0.1685	0.0133	0.0207
16	HLEGU	0.1027	2.2282	-3.0382	0.9684	0.3571	0.5050	0.3050	0.2878	0.4583	0.3572	-0.1393	0.0461
17	HMAWBI	1.5239	-2.1669	-2.5280	1.4677	1.5633	-0.8064	0.0372	-0.0984	0.1697	-0.3405	-0.0705	-0.0130
18	KYANGIN	-2.9441	-0.8084	0.2094	0.2182	1.3292	-0.8091	0.4743	-0.3084	-0.2330	-0.1265	-0.0304	0.0219
19	MYANAUNG	0.5979	2.3590	0.5922	-0.7212	-0.2659	-0.6857	-0.0096	-0.3442	-0.2564	0.1584	0.1756	-0.0388
20	INGABU	1.4077	3.7901	0.5603	0.0726	-0.1810	0.1408	-0.6185	-0.8118	0.6699	-0.3819	0.1292	-0.0073
21	LEMYETHNA	-1.5560	-0.3871	0.2080	0.6431	1.3480	0.2193	0.4277	-0.2568	-0.2750	-0.1278	0.3100	-0.0416
22	YEGYI	0.8366	0.9649	-0.1380	0.3859	0.2381	-0.0554	0.2647	0.0894	-0.2982	0.2266	0.0972	0.0558
23	HENZADA	4.4536	1.6055	0.5202	-0.5093	-0.9705	-0.4361	1.0289	0.5413	-0.2202	-0.2725	0.1502	0.0287
24	ZALUN	2.4585	-0.6596	1.2780	1.3243	0.0218	0.3290	-0.0336	0.2491	-0.3622	0.2751	0.0208	-0.0384
25	KYONPYAW	3.0072	-0.4679	-1.4727	-0.6635	-0.2458	-0.4989	-0.4113	0.1726	-0.1106	0.0208	-0.0890	-0.1746
26	DANUBYU	2.9319	-0.4857	0.0157	-0.0574	-0.1190	0.2531	-1.1500	-0.1377	-0.2216	0.0360	-0.0775	0.0898

9. RANK ORDER OF EACH STANDARDIZED CASE ORDER BY SIZE OF EACH PRINCIPAL COMPONENT SEPARATELY

NO.	COMP. NO.1	TOWNSHIP	COMP. NO.2	TOWNSHIP	COMP. NO.3	TOWNSHIP
1	4.4536	HENZADA	3.7901	INGABU	3.4167	MONYO
2	3.0072	KYONPYAW	2.3590	MYANAUNG	1.7919	PADAUNG
3	2.9319	DANUBYU	2.2282	HLEGU	1.2780	ZALUN
4	2.4585	ZALUN	2.0968	TAIKKYI	1.1493	SHWEDAUNG
5	1.5239	HMAWBI	1.8353	PADAUNG	1.0841	LETPADAN
6	1.4077	INGABU	1.6722	LETPADAN	0.7222	MINHLA
7	1.2744	MONYO	1.6085	HENZADA	0.5922	MYANAUNG
8	0.8366	YEGYI	0.9649	YEGYI	0.5603	INGABU
9	0.5978	MYANAUNG	0.7364	PAUKKAUNG	0.5202	HENZADA
10	0.4229	ZIGON	0.5495	NATTALIN	0.2094	KYANGIN
11	0.3193	MINHLA	-0.0466	THARRAWADDY	0.2080	LEMYETHNA
12	0.1188	TAIKKYI	-0.3871	LEMYETHNA	0.2069	NATTALIN
13	0.1027	HLEGU	-0.4679	KYONPYAW	0.1422	THARRAWADDY
14	-0.0983	THEGON	-0.4857	DANUBYU	0.0948	OKPO
15	-0.1428	SHWEDAUNG	-0.5652	OKPO	0.0157	DANUBYU
16	-0.3368	THARRAWADDY	-0.6596	ZALUN	-0.0963	GYOBINGAUK
17	-0.3607	PROME	-0.8084	KYANGIN	-0.1000	PAUNGDE
18	-0.4391	LETPADAN	-0.8180	PAUNGDE	-0.1380	YEGYI
19	-0.8868	GYOBINGAUK	-0.9625	PROME	-0.3509	THEGON
20	-1.4527	NATTALIN	-1.0414	SHWEDAUNG	-0.4506	ZIGON
21	-1.5560	LEMYETHNA	-1.0613	MINHLA	-0.7607	PROME
22	-1.7490	PAUNGDE	-1.2821	MONYO	-1.2464	PAUKKAUNG
23	-1.7619	OKPO	-1.3750	GYOBINGAUK	-1.4727	KYONPYAW
24	-2.9441	KYANGIN	-1.4003	THEGON	-1.8100	TAIKKYI
25	-3.3647	PADAUNG	-2.1669	HMAWBI	-2.5280	HMAWBI
26	-4.3625	PAUKKAUNG	-4.3131	ZIGON	-3.0382	HLEGU

*** PRINCIPAL COMPONENT ANALYSIS ***

** PARAMETER **

NUMBER OF VARIABLES: 12

NUMBER OF DATA: 26

CONTRIBUTIVE FACTOR FOR DETERMINING NO. OF PRINCIPAL COMPONENT: 1.0000

** RESULTS **

** INDER = 0 **

1. MEAN AND STANDARD DEVIATION

VARIABLE NO	MEAN	STANDARD DEVIATION
1	125.735	45.8980
2	1894.462	486.7413
3	286.769	27.5235
4	0.397	0.1751
5	0.040	0.0537
6	3628.769	1380.3246
7	43.973	4.1476
8	23038.231	29431.5794
9	35126.885	10994.3160
10	2787.577	2074.8155
11	904.385	517.0934
12	151.692	84.2552

2. STANDARDIZED DATA

DATA NO.	TOWNSHIP	VARIABLE 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-1.1555	-1.2439	0.9530	-1.7144	-0.5805	-1.3741	-1.0785	3.7801	-0.8637	-0.8423	-1.2848	-1.3434
2	PROME	0.4764	-1.2460	0.9530	0.1079	-0.2827	-0.5265	-0.5239	1.0819	-0.5254	-0.8996	0.3590	0.1579
3	PADAUNG	-0.4518	-1.2460	0.9530	-2.0000	-0.3571	-1.2734	0.5128	-0.7251	0.3168	0.6460	-1.0779	-1.0052
4	PAUNGDE	-0.4561	-1.0282	0.0084	-0.4862	-0.6363	-0.2628	0.9709	0.7971	-0.7279	-0.8389	0.5330	0.2292
5	THEGON	-0.4234	-1.2460	0.0084	0.5820	-0.5805	0.2631	0.2958	-0.6120	-0.3939	-0.8861	0.4943	0.1342
6	SHWEDAUNG	-0.4278	-1.2645	0.1537	-0.4234	1.1874	-1.0409	-0.9820	0.4215	-0.6746	0.8735	-0.6467	-0.8272
7	NATTALIN	0.1060	-1.0282	0.0084	-0.3777	-0.7107	0.7304	1.4049	-0.4550	0.3271	-0.9020	0.6897	1.0006
8	ZIGON	-1.4714	-0.8104	-0.9726	2.0044	-0.6735	-1.1228	1.2602	-0.7594	-1.7741	-1.2881	-0.1052	0.2054
9	GYOBINGAUK	-0.7110	-0.8104	-0.9726	0.2793	-0.5060	0.1262	0.9709	-0.6359	-0.5686	-1.1353	0.3976	0.7158
10	MONYO	-0.5084	0.3586	-0.6819	-0.6405	3.5879	-1.8291	0.4887	-0.5231	-0.1747	1.4239	-1.5266	-1.6224
11	OKPO	-0.7219	-0.8104	-0.6819	-0.3491	-0.6363	0.2146	1.1638	-0.3020	-0.4681	-0.9531	0.6394	0.8582
12	MINHLA	-0.6369	0.3586	-0.4276	0.4049	-0.0036	-0.2136	1.0914	-0.6822	-0.3007	0.3920	0.2623	1.0125
13	LETPADAN	0.2803	0.3915	-0.5729	-0.5890	-0.1524	0.8920	1.5254	-0.4283	0.7215	0.8687	0.1250	1.0837
14	THARRAWADDY	-0.2034	0.4223	-0.7546	-0.0692	-0.2455	0.2979	0.7539	-0.0402	-0.3931	0.1462	1.5599	0.0867
15	TAIKKYI	0.2738	1.7145	0.4080	-0.0921	-0.7107	1.0688	-1.1267	0.7276	0.7869	-0.1935	0.5814	-0.0201
16	HLEGU	0.2956	1.7762	0.4080	-0.0121	-0.7479	1.3969	-1.8741	1.6672	0.9351	-1.1522	0.6007	-1.1951
17	HMAWBI	-0.5542	1.8378	0.4080	1.1533	-0.7293	-0.9489	-2.2840	-0.5230	-0.8581	-1.2642	-1.1688	-1.3731
18	KYANGIN	-1.1707	-0.3030	2.4790	-1.4231	-0.5432	-1.3597	-0.3552	-0.7220	-1.1596	-0.8220	-1.2829	-1.1357
19	MYANAUNG	1.3174	-0.3030	2.4790	-0.3491	-0.0222	1.1238	-0.1864	-0.4575	1.3245	1.1145	-0.7801	-0.1625
20	INGABU	1.3261	0.6400	0.9530	-0.3320	0.3314	1.1861	-0.3793	0.4450	3.1509	1.7777	-0.7550	0.4784
21	LEMYETHNA	-0.8526	0.6400	-0.5729	-0.8975	0.1639	-0.9061	-0.2828	-0.1152	-0.7561	-0.2283	-1.4202	-0.3049
22	YEGYI	0.6725	0.6400	-1.1543	0.0279	0.3872	0.5725	-0.5963	0.0148	0.2541	0.4480	0.0399	-0.0676
23	HENZADA	3.3131	0.6400	-0.5729	1.1533	1.3176	1.7077	-0.0176	-0.7362	1.3614	1.0176	1.7804	2.9352
24	ZALUN	0.4263	0.6400	-0.7909	0.6049	1.8015	-0.1983	-0.1623	-0.2542	-0.3079	1.4254	-0.2212	-0.0794
25	KYONPYAW	0.9557	0.6400	-1.0089	1.7531	-0.7479	1.0144	-0.5963	-0.5989	0.3214	-0.0384	-0.0472	0.6920
26	DANUBYU	0.3021	0.6400	-1.0089	1.6845	0.0895	0.4617	0.0065	-0.3652	0.4468	1.3304	2.2542	-0.4474

3. CORRELATION COEFFICIENT MATRIX

VARIABLES	VARIABLES 1	2	3	4	5	6	7	8	9	10	11	12
1	1.0000	0.3466	-0.0033	0.2887	0.2499	0.7529	-0.1629	-0.1116	0.7691	0.5247	0.3965	0.5603
2	0.3466	1.0000	-0.1833	0.3324	0.1257	0.3973	-0.4830	-0.0774	0.3823	0.2314	0.1009	-0.0435
3	-0.0033	-0.1833	1.0000	-0.5296	-0.2249	-0.1216	-0.3460	0.2560	0.1676	-0.0690	-0.4467	-0.3654
4	0.2887	0.3324	-0.5296	1.0000	-0.0332	0.3486	-0.0322	-0.3664	-0.0171	-0.0302	0.5147	0.3765
5	0.2499	0.1257	-0.2249	-0.0332	1.0000	-0.2125	0.0273	-0.1681	0.1345	0.6946	-0.1940	-0.0839
6	0.7529	0.3973	-0.1216	0.3486	-0.2125	1.0000	-0.0050	-0.0735	0.7333	0.1932	0.6265	0.6283
7	-0.1629	-0.4830	-0.3460	-0.0322	0.0273	-0.0050	1.0000	-0.4492	-0.1233	0.0614	0.2807	0.5057
8	-0.1116	-0.0774	0.2560	-0.3664	-0.1681	-0.0735	-0.4492	1.0000	0.0017	-0.2173	-0.1166	-0.3450
9	0.7691	0.3823	0.1676	-0.0171	0.1345	0.7333	-0.1233	0.0017	1.0000	0.5911	0.1860	0.3158
10	0.5247	0.2314	-0.0690	-0.0302	0.6946	0.1932	0.0614	-0.2173	0.5911	1.0000	-0.0116	0.1037
11	0.3965	0.1009	-0.4467	0.5147	-0.1940	0.6265	0.2807	-0.1166	0.1860	-0.0116	1.0000	0.5937
12	0.5603	-0.0435	-0.3654	0.3765	-0.0839	0.6283	0.5057	-0.3450	0.3158	0.1037	0.5937	1.0000

4. EIGEN VALUE

COMPONENT NO.	EIGENVALUE	CUMULATIVE CONTRIBUTION
1	3.9360	0.3280
2	2.4345	0.5309
3	1.8628	0.6861
4	1.4811	0.8095
5	0.8062	0.8767
6	0.5182	0.9199
7	0.3477	0.9489
8	0.2424	0.9691
9	0.1430	0.9810
10	0.1264	0.9915
11	0.0595	0.9965
12	0.0425	1.0000

5. EIGENVECTORS

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.4225	0.2472	-0.0285	0.1164	0.0183	0.3919	-0.1842	-0.1933	0.1607	0.1306	-0.1003	-0.6840
2	0.2168	0.2682	-0.1094	-0.5170	-0.1886	-0.5202	-0.1221	-0.3109	-0.3991	-0.0571	-0.0687	-0.1295
3	-0.1962	0.3488	-0.1989	0.3838	-0.4104	0.3175	0.2594	-0.2463	-0.4303	-0.2391	0.0708	0.0920
4	0.2764	-0.2408	-0.0849	-0.4778	-0.1273	0.4665	0.1331	0.4681	-0.2745	-0.2892	-0.0080	-0.0169
5	0.0750	0.2121	0.6044	-0.1561	0.2778	0.2150	-0.1018	-0.3392	0.0825	-0.4904	0.0804	0.2391
6	0.4319	0.0640	-0.2975	0.1349	-0.0214	-0.1707	-0.0057	0.0525	0.2422	-0.2170	0.7416	0.1204
7	0.0755	-0.4378	0.3119	0.3937	0.0012	-0.3331	0.0740	0.0700	-0.2993	-0.3868	0.0216	-0.4353
8	-0.1750	0.2401	-0.3474	0.0654	0.7674	0.0084	-0.1244	0.1763	-0.3508	-0.1316	0.0327	-0.0990
9	0.3437	0.3712	-0.0426	0.2523	-0.0579	-0.2292	0.0575	0.3779	0.2026	-0.2804	-0.5586	0.2119
10	0.2362	0.3138	0.4731	0.0710	0.0904	-0.0433	0.3360	0.2631	-0.3194	0.5057	0.2322	0.0462
11	0.3410	-0.2807	-0.2065	0.0017	0.3185	0.0173	0.6302	-0.4401	0.0096	0.0714	-0.2131	0.1383
12	0.3754	-0.2719	-0.0203	0.2702	0.0009	0.1276	-0.5670	-0.1253	-0.3649	0.2117	-0.1042	0.4117

6. CORRELATION COEFFICIENT BETWEEN COMPONENT AND ORIGINAL VARIABLE

VARIABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.8383	0.3856	-0.0389	0.1417	0.0164	0.2821	-0.1086	-0.0952	0.0608	0.0464	-0.0245	-0.1410
2	0.4302	0.4184	-0.1493	-0.6292	-0.1693	-0.3745	-0.0720	-0.1531	-0.1509	-0.0203	-0.0168	-0.0267
3	-0.3892	0.5442	-0.2715	0.4671	-0.3685	0.2286	0.1530	-0.1213	-0.1627	-0.0850	0.0173	0.0190
4	0.5484	-0.3758	-0.1158	-0.5815	-0.1143	0.3358	0.0785	0.2305	-0.1038	-0.1028	-0.0019	-0.0035
5	0.1487	0.3310	0.8249	-0.1900	0.2494	0.1548	-0.0600	-0.1670	0.0312	-0.1743	0.0196	0.0493
6	0.8569	0.0999	-0.4060	0.1642	-0.0192	-0.1229	-0.0033	0.0259	0.0916	-0.0771	0.1810	0.0248
7	0.1497	-0.6830	0.4257	0.4791	0.0011	-0.2397	0.0436	0.0344	-0.1132	-0.1375	0.0053	-0.0897
8	-0.3471	0.3747	-0.4742	0.0796	0.6890	0.0061	-0.0733	0.0868	-0.1326	-0.0468	0.0080	-0.0204
9	0.6818	0.5792	-0.0581	0.3071	-0.0520	-0.1650	0.0339	0.1860	0.0766	-0.0997	-0.1363	0.0437
10	0.4686	0.4896	0.6457	0.0864	0.0812	-0.0312	0.1981	0.1394	-0.1208	0.1798	0.0566	0.0095
11	0.6764	-0.4380	-0.2819	0.0020	0.2860	0.0124	0.3716	-0.2167	0.0036	0.0254	-0.0520	0.0285
12	0.7447	-0.4242	-0.0277	0.0288	0.0009	0.0919	-0.3343	-0.0617	-0.1380	0.0753	-0.0254	0.0848

Model No. 4

7. CONTRIBUTIVE FACTOR OF PRINCIPAL COMPONENT AGAINST ORIGINAL VARIABLE

VARI-ABLES	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	0.7027	0.8514	0.8529	0.8730	0.8733	0.9528	0.9646	0.9737	0.9774	0.9795	0.9801	1.0000
2	0.1850	0.3601	0.3824	0.7783	0.8070	0.9472	0.9524	0.9758	0.9986	0.9990	0.9993	1.0000
3	0.1515	0.4477	0.5214	0.7395	0.8753	0.9275	0.9509	0.9657	0.9921	0.9993	0.9996	1.0000
4	0.3007	0.4419	0.4554	0.7935	0.8066	0.9194	0.9255	0.9786	0.9894	1.0000	1.0000	1.0000
5	0.0221	0.1316	0.8121	0.8482	0.9104	0.9343	0.9379	0.9658	0.9668	0.9972	0.9976	1.0000
6	0.7344	0.7443	0.9092	0.9362	0.9365	0.9516	0.9516	0.9523	0.9607	0.9666	0.9994	1.0000
7	0.0224	0.4889	0.6701	0.8996	0.8996	0.9571	0.9590	0.9602	0.9730	0.9919	0.9920	1.0000
8	0.1205	0.2609	0.4857	0.4921	0.9668	0.9668	0.9722	0.9797	0.9973	0.9995	0.9996	1.0000
9	0.4649	0.8003	0.8037	0.8980	0.9007	0.9279	0.9291	0.9637	0.9696	0.9795	0.9981	1.0000
10	0.2195	0.4592	0.8761	0.8836	0.8901	0.8911	0.9304	0.9498	0.9644	0.9967	0.9999	1.0000
11	0.4576	0.6494	0.7289	0.7289	0.8107	0.8108	0.9489	0.9958	0.9958	0.9965	0.9992	1.0000
12	0.5546	0.7346	0.7354	0.8435	0.8435	0.8519	0.9637	0.9675	0.9865	0.9922	0.9928	1.0000

8. SCORE OF PRINCIPAL COMPONENT

DATA	TOWNSHIP	COMPONENT 1	2	3	4	5	6	7	8	9	10	11	12
1	PAUKKAUNG	-4.2390	1.4375	-1.5358	0.7772	2.3716	0.2380	-0.4765	0.4580	-0.4387	0.1294	0.0185	-0.0959
2	PROME	-0.9148	-0.1355	-1.1101	0.6984	0.6647	1.5863	-0.0114	-0.2977	-0.1127	-0.0611	-0.2929	-0.1269
3	PADAUNG	-2.0955	0.7086	1.2393	1.8039	-0.8417	-0.4431	0.5141	0.1689	0.5406	0.6593	-0.4640	-0.2641
4	PAUNGDE	-0.9597	-1.3992	-0.5961	1.0316	0.8220	-0.0349	0.0682	-0.1872	-0.1774	-0.1072	-0.0038	-0.2561
5	THEGON	-0.2160	-1.5583	-0.5342	0.3973	-0.3863	0.6374	0.3804	0.2291	0.5669	-0.2347	0.1539	0.2659
6	SHWEDAUNG	-1.6671	0.8572	1.3227	-0.1523	0.8071	1.1051	0.2929	0.1686	0.3577	0.4796	0.2637	0.4895
7	NATTALIN	0.6738	-1.6111	-0.5142	1.7504	-0.1999	-0.2426	-0.1303	-0.1428	0.3808	-0.4005	-0.0797	-0.0457
8	ZIGON	-1.2327	-3.4408	0.2215	-1.1670	-0.5216	0.5788	-0.0706	0.8236	-0.5070	-0.4245	-0.0732	-0.1470
9	GYOBINGAUK	-0.0663	-2.3500	-0.1505	0.2361	-0.0692	-0.2169	-0.3529	0.0929	0.4624	-0.2006	0.0036	0.2083
10	MONYO	-1.4263	1.4426	4.2414	-1.2328	0.5705	-0.2397	-0.0397	-0.3040	0.2217	-0.9049	-0.1691	-0.1242
11	OKPO	-0.1036	-2.1384	-0.2865	0.8538	0.1976	-0.5351	-0.2351	-0.1843	0.2564	-0.0523	0.0204	0.2374
12	MINHLA	0.5724	-1.3015	0.7920	-0.0345	-0.3366	-0.5309	-0.1107	0.0078	-0.8650	0.1129	-0.0541	0.3164
13	LETPADAN	1.6193	-0.4189	0.7126	1.1451	-0.0692	-1.3098	-0.3522	0.1471	-0.3313	0.1445	0.2364	-0.1794
14	THARRAWADDY	0.7726	-1.1177	-0.1103	-0.1837	0.6635	-0.8045	0.8254	-0.5984	-0.1601	0.2331	0.0668	-0.1560
15	TAIKKYI	0.9933	1.3512	-1.8651	-0.8144	-0.0152	-0.8164	0.0843	-0.3937	-0.2742	0.0423	0.0132	0.2369
16	HLEGU	0.3463	1.9880	-2.9389	-1.2127	0.5759	-0.7519	0.2780	-0.3132	0.4185	-0.6426	0.0741	-0.0183
17	HMAWBI	-1.6545	0.8592	-1.3551	-3.0372	-1.6974	0.3126	-0.3262	-0.0809	-0.0115	0.1244	-0.3065	-0.0517
18	KYANGIN	-3.4250	0.5971	-0.1411	0.7062	-1.0036	0.1839	0.3255	-0.9597	-0.3280	0.0544	0.0904	0.0960
19	MYANAUNG	0.8493	2.3366	-0.0796	1.8481	-1.4977	0.7736	0.4812	0.2181	-0.1874	-0.3010	0.5818	-0.2141
20	INGABU	2.2760	3.1402	0.1583	1.3852	-0.2992	-0.4180	-0.2116	1.1226	-0.2006	-0.2642	-0.4304	0.2888
21	LEMYETHNA	-1.6499	0.1794	0.6886	-0.7796	-0.2403	-0.0648	-1.0496	-0.1437	0.0369	0.4201	0.0431	0.0347
22	YEGYI	1.0671	0.5540	0.2049	-0.8482	0.5061	-0.3243	-0.3578	0.0417	0.6189	0.3776	0.2105	-0.1777
23	HENZADA	5.3509	0.2596	0.3865	0.4651	0.3759	1.3620	-0.8591	-0.9857	-0.1103	0.1679	-0.2875	-0.0301
24	ZALUN	0.8485	0.6515	1.9441	-1.2607	0.5203	0.3330	-0.0772	-0.0566	-0.2651	0.0637	0.3966	-0.0175
25	KYONPYAW	2.0121	-0.4103	-0.8132	-1.1996	-0.5386	0.4141	-0.5984	0.8898	0.2479	0.3123	0.1839	-0.2523
26	DANUBYU	2.2689	-0.4811	0.1786	-1.3709	0.6312	0.0079	2.0097	0.3192	-0.1394	0.2722	-0.1958	-0.0163

Model No. 4

9. RANK ORDER OF EACH STANDARDIZED CASE ORDER BY SIZE OF EACH PRINCIPAL COMPONENT SEPARATELY

NO.	COMP. NO.1	TOWNSHIP	COMP. NO.2	TOWNSHIP	COMP. NO.3	TOWNSHIP
1	5.3509	HENZADA	3.1402	INGABU	4.2414	MONYO
2	2.2760	INGABU	2.3366	MYANAUNG	1.9441	ZALUN
3	2.2689	DANUBYU	1.9880	HLEGU	1.3227	SHWEDAUNG
4	2.0121	KYONPYAW	1.4428	MONYO	1.2393	PADAUNG
5	1.6193	LETPADAN	1.4375	PAUKKAUNG	0.7920	MINHLA
6	1.0671	YEGYI	1.3512	TAIKKYI	0.7126	LETPADAN
7	0.9933	TAIKKYI	0.8592	HMAWBI	0.6886	LEMYETHNA
8	0.8493	MYANAUNG	0.8572	SHWEDAUNG	0.3865	HENZADA
9	0.8485	ZALUN	0.7086	PADAUNG	0.2215	ZIGON
10	0.7726	THARRAWADDY	0.6515	ZALUN	0.2049	YEGYI
11	0.6738	NATTALIN	0.5971	KYANGIN	0.1786	DANUBYU
12	0.5724	MINHLA	0.5540	YEGYI	0.1583	INGABU
13	0.3463	HLEGU	0.2596	HENZADA	-0.0796	MYANAUNG
14	-0.0663	GYOBINGAUK	0.1794	LEMYETHNA	-0.1103	THARRAWADDY
15	-0.1036	OKPO	-0.1355	PROME	-0.1411	KYANGIN
16	-0.2160	THEGON	-0.4103	KYONPYAW	-0.1505	GYOBINGAUK
17	-0.9148	PROME	-0.4189	LETPADAN	-0.2865	OKPO
18	-0.9597	PAUNGDE	-0.4811	DANUBYU	-0.5142	NATTALIN
19	-1.2327	ZIGON	-1.1177	THARRAWADDY	-0.5342	THEGON
20	-1.4263	MONYO	-1.3015	MINHLA	-0.5961	PAUNGDE
21	-1.6499	LEMYETHNA	-1.3992	PAUNGDE	-0.8132	KYONPYAW
22	-1.6545	HMAWBI	-1.5583	THEGON	-1.1101	PROME
23	-1.6671	SHWEDAUNG	-1.6111	NATTALIN	-1.3551	HMAWBI
24	-2.0955	PADAUNG	-2.1384	OKPO	-1.5358	PAUKKAUNG
25	-3.4250	KYANGIN	-2.3500	GYOBINGAUK	-1.8651	TAIKKYI
26	-4.2390	PAUKKAUNG	-3.4408	ZIGON	-2.9989	HLEGU

DYNAMB (REV.1) BURMA AGRICULTURAL MODEL CASE (RUN)NO. 1

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TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.6000	7.8003	0.0	0.39985	0.1000	28.890
1.0000	1.6564	5.1800	8.5800	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.2100	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.3200	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.6400	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8718	5.1500	9.6400	8.6956	0.0	0.97903	2.3999	32.206
6.0000	1.8718	5.1500	9.6400	8.8870	0.0	0.70088	2.3652	32.915
7.0000	1.8718	5.1500	9.6400	9.0828	0.0	0.50396	2.4173	33.640
8.0000	1.8718	5.1500	9.6400	9.2829	0.0	0.30271	2.4705	34.381
9.0000	1.8718	5.1500	9.6400	9.4873	0.0	0.09715	2.5249	35.138
10.000	1.8718	5.1500	9.6400	9.6997	0.0	0.0	2.5805	35.925
11.000	1.8718	5.1500	9.6400	9.9171	0.0	0.0	2.5208	36.730
12.000	1.8718	5.1500	9.6400	10.1393	0.0	0.0	2.2437	37.553
13.000	1.8718	5.1500	9.6400	10.3664	0.0	0.0	1.7444	38.394
14.000	1.8718	5.1500	9.6400	10.6021	0.0	0.0	1.0180	39.267
15.000	1.8718	5.1500	9.6400	10.8432	1.14729	0.0	0.0559	40.160
16.000	1.8718	5.1500	9.6400	11.0897	1.44971	0.0	0.0	41.073
17.000	1.8718	5.1500	9.6400	11.3422	1.70216	0.0	0.0	42.008
18.000	1.8718	5.1500	9.6400	11.6103	1.97027	0.0	0.0	43.001
19.000	1.8718	5.1500	9.6400	11.8846	2.24459	0.0	0.0	44.017
20.000	1.8718	5.1500	9.6400	12.1654	2.52539	0.0	0.0	45.057

Notes: TIME: Time(year), YPHA: Yield(ton/ha), AREA: Cropped Area(million ha), PROT: Paddy Production (million tons), ACSP: Domestic Consumption (million tons), AIMP: Import(million tons) AEXP: Export(million tons), BSTK: Stock(million tons), TPOPU: Population(million persons)

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL CASE (RUN)NO. 2

*** プリント リスト ***

TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.6000	7.8003	0.0	0.39385	0.1000	28.890
1.0000	1.6564	5.1800	8.5800	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.2100	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.3200	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.6400	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8718	5.1500	9.6400	8.6956	0.0	0.97903	2.3999	32.206
6.0000	1.8718	5.1500	9.6400	8.8870	0.0	0.70088	2.3652	32.915
7.0000	1.8718	5.1500	9.6400	9.0828	0.0	0.50396	2.4173	33.640
8.0000	1.8718	5.1500	9.6400	9.2829	0.0	0.30271	2.4705	34.381
9.0000	1.8718	5.1500	9.6400	9.4873	0.0	0.09715	2.5249	35.138
10.000	1.9741	5.1500	10.1668	9.6997	0.0	0.40925	2.5805	35.925
11.000	2.0299	5.1500	10.4541	9.9171	0.0	0.47787	2.6383	36.730
12.000	2.0564	5.1500	10.5905	10.1393	0.0	0.39074	2.6975	37.553
13.000	2.0642	5.1500	10.6304	10.3664	0.0	0.20226	2.7579	38.394
14.000	2.0660	5.1500	10.6401	10.6021	0.0	0.0	2.8197	39.267
15.000	2.0660	5.1500	10.6401	10.8432	0.0	0.0	2.8577	40.160
16.000	2.0660	5.1500	10.6401	11.0897	0.0	0.0	2.6546	41.073
17.000	2.0660	5.1500	10.6401	11.3422	0.0	0.0	2.2050	42.008
18.000	2.0660	5.1500	10.6401	11.6103	0.0	0.0	1.5029	43.001
19.000	2.0660	5.1500	10.6401	11.8846	0.71175	0.0	0.5327	44.017
20.000	2.0660	5.1500	10.6401	12.1654	1.52529	0.0	0.0	45.057

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL CASE (RUN) NO. 3

*** プリント リスト ***

TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.600	7.8003	0.0	0.39985	0.1000	28.890
1.0000	1.6564	5.1800	8.580	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.210	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.320	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.640	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8718	5.1500	9.640	8.6956	0.0	0.97903	2.3999	32.206
6.0000	1.8718	5.1500	9.640	8.8870	0.0	0.70088	2.3652	32.915
7.0000	1.8718	5.1500	9.640	9.0828	0.0	0.50396	2.4173	33.640
8.0000	1.8718	5.1500	9.640	9.2829	0.0	0.30271	2.4705	34.381
9.0000	1.8718	5.1500	9.640	9.4873	0.0	0.09715	2.5249	35.138
10.000	1.9741	5.1500	10.167	9.6997	0.0	0.40925	2.5805	35.925
11.000	2.1054	5.1500	10.843	9.9171	0.0	0.86642	2.6383	36.730
12.000	2.2119	5.1500	11.391	10.1393	0.0	1.19169	2.6975	37.553
13.000	2.2994	5.1500	11.842	10.3664	0.0	1.41355	2.7579	38.394
14.000	2.3803	5.1500	12.258	10.6021	0.0	1.59215	2.8197	39.267
15.000	2.4588	5.1500	12.663	10.8432	0.0	1.75414	2.8838	40.160
16.000	2.4588	5.1500	12.663	11.0897	0.0	1.50616	2.9494	41.073
17.000	2.4588	5.1500	12.663	11.3422	0.0	1.25209	3.0164	42.008
18.000	2.4588	5.1500	12.663	11.6103	0.0	0.97972	3.0851	43.001
19.000	2.4588	5.1500	12.663	11.8846	0.0	0.70371	3.1580	44.017
20.000	2.4588	5.1500	12.663	12.1654	0.0	0.42115	3.2326	45.057

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL CASE(RUN) NO. 4

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TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.6000	7.8003	0.0	0.39985	0.1000	28.890
1.0000	1.6564	5.1800	8.5800	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.2100	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.3200	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.6400	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8699	5.1775	9.6812	8.6956	0.0	1.02028	2.3999	32.206
6.0000	1.8679	5.2050	9.7225	8.8870	0.0	0.78338	2.3652	32.915
7.0000	1.8660	5.2325	9.7637	9.0828	0.0	0.62771	2.4173	33.640
8.0000	1.8641	5.2600	9.8050	9.2829	0.0	0.46771	2.4705	34.381
9.0000	1.8622	5.2875	9.8462	9.4873	0.0	0.30340	2.5249	35.138
10.000	1.8603	5.3150	9.8875	9.6997	0.0	0.12995	2.5805	35.925
11.000	1.8584	5.3425	9.9287	9.9171	0.0	0.0	2.6383	36.730
12.000	1.8566	5.3700	9.9700	10.1393	0.0	0.0	2.6500	37.553
13.000	1.8548	5.3975	10.0112	10.3664	0.0	0.0	2.4807	38.394
14.000	1.8530	5.4250	10.0525	10.6021	0.0	0.0	2.1255	39.267
15.000	1.8512	5.4525	10.0937	10.8432	0.0	0.0	1.5760	40.160
16.000	1.8495	5.4800	10.1350	11.0897	0.12821	0.0	0.8265	41.073
17.000	1.8477	5.5075	10.1762	11.3422	1.16591	0.0	0.0	42.008
18.000	1.8460	5.5350	10.2175	11.6103	1.39277	0.0	0.0	43.001
19.000	1.8443	5.5625	10.2587	11.8846	1.62584	0.0	0.0	44.017
20.000	1.8426	5.5900	10.3000	12.1654	1.86539	0.0	0.0	45.057

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL CASE (RUN)NO. 5

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TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.600	7.8003	0.0	0.39985	0.1000	28.890
1.0000	1.6564	5.1800	8.580	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.210	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.320	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.640	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8699	5.1775	9.681	8.6956	0.0	1.02028	2.3999	32.206
6.0000	1.8679	5.2050	9.722	8.8870	0.0	0.78338	2.3652	32.915
7.0000	1.8660	5.2325	9.764	9.0828	0.0	0.62771	2.4173	33.640
8.0000	1.8641	5.2600	9.805	9.2829	0.0	0.46771	2.4705	34.381
9.0000	1.8622	5.2875	9.846	9.4873	0.0	0.30340	2.5249	35.138
10.000	1.9594	5.3150	10.414	9.6997	0.0	0.65675	2.5805	35.925
11.000	2.0108	5.3425	10.743	9.9171	0.0	0.76662	2.6383	36.730
12.000	2.0336	5.3700	10.920	10.1393	0.0	0.72074	2.6975	37.553
13.000	2.0383	5.3975	11.002	10.3664	0.0	0.57351	2.7579	38.394
14.000	2.0373	5.4250	11.053	10.6021	0.0	0.38640	2.8197	39.267
15.000	2.0346	5.4525	11.094	10.8432	0.0	0.18507	2.8838	40.160
16.000	2.0320	5.4800	11.135	11.0897	0.0	0.0	2.9494	41.073
17.000	2.0293	5.5075	11.176	11.3422	0.0	0.0	2.9947	42.008
18.000	2.0267	5.5350	11.218	11.6103	0.0	0.0	2.8289	43.001
19.000	2.0241	5.5625	11.259	11.8846	0.0	0.0	2.4363	44.017
20.000	2.0215	5.5900	11.300	12.1654	0.0	0.0	1.8105	45.057

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL CASE (RUN)NO. 6

*** プリント リスト ***

TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.600	7.8003	0.0	0.3998	0.1000	28.890
1.0000	1.6564	5.1800	8.580	7.9707	0.0	0.3047	0.4998	29.521
2.0000	1.7712	5.2000	9.210	8.1459	0.0	0.5320	0.8045	30.170
3.0000	1.8346	5.0800	9.320	8.3252	0.0	0.4974	1.3366	30.834
4.0000	1.8718	5.1500	9.640	8.5082	0.0	0.5659	1.8340	31.512
5.0000	1.8699	5.1775	9.681	8.6956	0.0	1.0203	2.3999	32.206
6.0000	1.8679	5.2050	9.722	8.8870	0.0	0.7834	2.3652	32.915
7.0000	1.8660	5.2325	9.764	9.0828	0.0	0.6277	2.4173	33.640
8.0000	1.8641	5.2600	9.805	9.2829	0.0	0.4677	2.4705	34.381
9.0000	1.8622	5.2875	9.846	9.4873	0.0	0.3034	2.5249	35.138
10.000	1.9594	5.3150	10.414	9.6997	0.0	0.6568	2.5805	35.925
11.000	2.0836	5.3425	11.131	9.9171	0.0	1.1552	2.6383	36.730
12.000	2.1828	5.3700	11.721	10.1393	0.0	1.5217	2.6975	37.553
13.000	2.2627	5.3975	12.213	10.3664	0.0	1.7848	2.7579	38.394
14.000	2.3356	5.4250	12.671	10.6021	0.0	2.0047	2.8197	39.267
15.000	2.4056	5.4525	13.117	10.8432	0.0	2.2079	2.8838	40.160
16.000	2.4011	5.4800	13.158	11.0897	0.0	2.0012	2.9494	41.073
17.000	2.3966	5.5075	13.199	11.3422	0.0	1.7883	3.0164	42.008
18.000	2.3921	5.5350	13.240	11.6103	0.0	1.5572	3.0851	43.001
19.000	2.3877	5.5625	13.282	11.8846	0.0	1.3225	3.1580	44.017
20.000	2.3833	5.5900	13.323	12.1654	0.0	1.0812	3.2326	45.057

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL CASE (RUN) NO. 7

*** プリント リスト ***

TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.600	7.8003	0.0	0.39385	0.1000	28.890
1.0000	1.6564	5.1800	8.580	7.9707	0.0	0.30466	0.4998	29.521
2.0000	1.7712	5.2000	9.210	8.1459	0.0	0.53205	0.8045	30.170
3.0000	1.8346	5.0800	9.320	8.3252	0.0	0.49741	1.3366	30.834
4.0000	1.8718	5.1500	9.640	8.5082	0.0	0.56588	1.8340	31.512
5.0000	1.8996	5.1775	9.835	8.6956	0.0	1.17411	2.3999	32.206
6.0000	1.9270	5.2050	10.030	8.8870	0.0	1.09105	2.3652	32.915
7.0000	1.9542	5.2325	10.225	9.0828	0.0	1.08921	2.4173	33.640
8.0000	1.9811	5.2600	10.420	9.2829	0.0	1.08305	2.4705	34.381
9.0000	2.0076	5.2875	10.615	9.4873	0.0	1.07257	2.5249	35.138
10.000	2.0340	5.3150	10.811	9.6997	0.0	1.05297	2.5805	35.925
11.000	2.0600	5.3425	11.006	9.9171	0.0	1.02938	2.6383	36.730
12.000	2.0858	5.3700	11.201	10.1393	0.0	1.00093	2.6975	37.553
13.000	2.1113	5.3975	11.396	10.3664	0.0	0.96763	2.7579	38.394
14.000	2.1366	5.4250	11.591	10.6021	0.0	0.92465	2.8197	39.267
15.000	2.1616	5.4525	11.786	10.8432	0.0	0.87716	2.8838	40.160
16.000	2.1863	5.4800	11.981	11.0897	0.0	0.82427	2.9494	41.073
17.000	2.2108	5.5075	12.176	11.3422	0.0	0.76529	3.0164	42.008
18.000	2.2351	5.5350	12.371	11.6103	0.0	0.68801	3.0851	43.001
19.000	2.2591	5.5625	12.566	11.8846	0.0	0.60708	3.1580	44.017
20.000	2.2829	5.5900	12.761	12.1654	0.0	0.51960	3.2326	45.057

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL CASE (RUN)NO. 8

*** プリント リスト ***

TIME	YPHA	AREA	PRDT	ACSP	AIMP	AEXP	BSTK	TPOPU
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	1.6896	5.0900	8.600	7.8003	0.0	0.3998	0.1000	28.890
1.0000	1.6564	5.1800	8.580	7.9707	0.0	0.3047	0.4998	29.521
2.0000	1.7712	5.2000	9.210	8.1459	0.0	0.5320	0.8045	30.170
3.0000	1.8346	5.0800	9.320	8.3252	0.0	0.4974	1.3366	30.834
4.0000	1.8718	5.1500	9.640	8.5082	0.0	0.5659	1.8340	31.512
5.0000	1.8996	5.1775	9.835	8.6956	0.0	1.1741	2.3999	32.206
6.0000	1.9270	5.2050	10.030	8.8870	0.0	1.0911	2.3652	32.915
7.0000	1.9542	5.2325	10.225	9.0828	0.0	1.0892	2.4173	33.640
8.0000	1.9811	5.2600	10.420	9.2829	0.0	1.0831	2.4705	34.381
9.0000	2.0076	5.2875	10.615	9.4873	0.0	1.0726	2.5249	35.138
10.000	2.0340	5.3150	10.811	9.6997	0.0	1.0530	2.5805	35.925
11.000	2.0997	5.3425	11.218	9.9171	0.0	1.2413	2.6383	36.730
12.000	2.1760	5.3700	11.685	10.1393	0.0	1.4854	2.6975	37.553
13.000	2.2628	5.3975	12.213	10.3664	0.0	1.7852	2.7579	38.394
14.000	2.3598	5.4250	12.802	10.6021	0.0	2.1359	2.8197	39.267
15.000	2.4670	5.4525	13.451	10.8432	0.0	2.5426	2.8838	40.160
16.000	2.5179	5.4800	13.798	11.0897	0.0	2.6411	2.9494	41.073
17.000	2.5682	5.5075	14.144	11.3422	0.0	2.7335	3.0164	42.008
18.000	2.6180	5.5350	14.491	11.6103	0.0	2.8076	3.0851	43.001
19.000	2.6674	5.5625	14.837	11.8846	0.0	2.8781	3.1580	44.017
20.000	2.7162	5.5900	15.184	12.1654	0.0	2.9420	3.2326	45.057

DYNAM0 (REV.1) BURMA AGRICULTURAL M0DEL RUN N0. 1~8

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TIME	IRRA1	IRRA2	IRRA3	IRRB1	IRRB2	IRRB3
E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	0.0	0.0	0.0	0.0	0.0	0.0
1.0000	0.0	0.0	0.0	0.0	0.0	0.0
2.0000	0.0	0.0	0.0	0.0	0.0	0.0
3.0000	0.0	0.0	0.0	0.0	0.0	0.0
4.0000	0.0	0.0	0.0	0.0	0.0	0.0
5.0000	0.0	0.0	0.0	0.0	0.0	0.0
6.0000	0.0	0.0	0.0	0.0	0.0	0.0
7.0000	0.0	0.0	0.0	0.0	0.0	0.0
8.0000	0.0	0.0	0.0	0.0	0.0	0.0
9.0000	0.0	0.0	0.0	0.0	0.0	0.0
10.000	.1138E-14	.3821E-15	.1520E-14	.1803E-14	.6054E-15	.2409E-14
11.000	0.16020	0.05378	0.21398	0.26940	0.09044	0.35984
12.000	0.32040	0.10756	0.42796	0.57000	0.19135	0.76135
13.000	0.48060	0.16134	0.64194	0.90180	0.30273	1.20453
14.000	0.64080	0.21512	0.85592	1.26480	0.42459	1.68939
15.000	0.80100	0.26890	1.06990	1.65900	0.55693	2.21593
16.000	0.80100	0.26890	1.06990	1.73700	0.58311	2.32011
17.000	0.80100	0.26890	1.06990	1.81500	0.60930	2.42430
18.000	0.80100	0.26890	1.06990	1.89300	0.63548	2.52848
19.000	0.80100	0.26890	1.06990	1.97100	0.66166	2.63266
20.000	0.80100	0.26890	1.06990	2.04900	0.68785	2.73685

Note:

1. TIME : Simulation time
2. $IRRA_1$: Irrigated area to high yielding varieties (RUN No. 3 & 6)
3. $IRRA_2$: Irrigated area to local vavieties (RUN No. 3 & 6)
4. $IRRA_3$: $IRRA_1 + IRRA_2$
5. $IRRB_1$: Irrigated area to high yielding varieties (RUN No.8)
6. $IRRB_2$: Irrigated area to local varieties (RUN No.8)
7. $IRRB_3$: $IRRB_1 + IRRB_2$

DYNAMB (REV. 1) BURMA AGRICULTURAL MODEL

RUN NO. 1.4 AND 7

*** プリント リスト ***

TIME	HND	LND	AINP	BINP
E+00	E+00	E+00	E+00	E+00
0.0000	3.1763	1.5125	79.841	7.9841
1.0000	3.2004	1.5141	81.593	8.1593
2.0000	3.1487	1.5106	77.831	7.7831
3.0000	3.4320	1.5302	98.460	9.8460
4.0000	3.4615	1.5322	100.610	10.0610
5.0000	3.4615	1.5322	100.610	10.0610
6.0000	3.4615	1.5322	100.610	10.0610
7.0000	3.4615	1.5322	100.610	10.0610
8.0000	3.4615	1.5322	100.610	10.0610
9.0000	3.4615	1.5322	100.610	10.0610
10.000	3.4615	1.5322	100.610	10.0610
11.000	3.4615	1.5322	100.610	10.0610
12.000	3.4615	1.5322	100.610	10.0610
13.000	3.4615	1.5322	100.610	10.0610
14.000	3.4615	1.5322	100.610	10.0610
15.000	3.4615	1.5322	100.610	10.0610
16.000	3.4615	1.5322	100.610	10.0610
17.000	3.4615	1.5322	100.610	10.0610
18.000	3.4615	1.5322	100.610	10.0610
19.000	3.4615	1.5322	100.610	10.0610
20.000	3.4615	1.5322	100.610	10.0610

Note:

HND : Yield of high yielding varieties

LND : Yield of local varieties

AINP : Volume of fertilizer to high yielding varieties

BINP : Volume of fertilizer to local varieties

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL

RUN NO. 2 AND 5

*** プリント リスト ***

TIME	WWLD	VVLD	YFAT	LFAT
E+00	E+00	E+00	E+00	E+00
0.0000	3.1763	1.5125	79.84	7.984
1.0000	3.2048	1.5144	81.91	8.191
2.0000	3.1642	1.5116	78.96	7.896
3.0000	3.4162	1.5291	97.31	9.731
4.0000	3.4615	1.5322	100.61	10.061
5.0000	3.4615	1.5322	100.61	10.061
6.0000	3.4615	1.5322	100.61	10.061
7.0000	3.4615	1.5322	100.61	10.061
8.0000	3.4615	1.5322	100.61	10.061
9.0000	3.4615	1.5322	100.61	10.061
10.000	3.9755	1.9604	145.61	55.061
11.000	4.1904	2.3886	190.61	100.061
12.000	4.2400	2.7480	201.00	145.061
13.000	4.2400	2.8964	201.00	190.061
14.000	4.2400	2.9325	201.00	201.000
15.000	4.2400	2.9325	201.00	201.000
16.000	4.2400	2.9325	201.00	201.000
17.000	4.2400	2.9325	201.00	201.000
18.000	4.2400	2.9325	201.00	201.000
19.000	4.2400	2.9325	201.00	201.000
20.000	4.2400	2.9325	201.00	201.000

Note :

WWLD : Yield of high yielding varieties

VVLD : Yield fo local varieties

YFAT : Volume of fertilizer to high yielding varieties

LFAT : Volume of fertolizer to local varieties

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL RUN NO. 3 AND 6

*** プリント リスト ***

TIME	AFIR	BFIR	YFAT	LFAT
E+00	E+00	E+00	E+00	E+00
0.0000	3.1763	1.5125	79.84	7.984
1.0000	3.2048	1.5144	81.91	8.191
2.0000	3.1642	1.5116	78.96	7.896
3.0000	3.4162	1.5291	97.31	9.731
4.0000	3.4615	1.5322	100.61	10.061
5.0000	3.4615	1.5322	100.61	10.061
6.0000	3.4615	1.5322	100.61	10.061
7.0000	3.4615	1.5322	100.61	10.061
8.0000	3.4615	1.5322	100.61	10.061
9.0000	3.4615	1.5322	100.61	10.061
10.000	3.9755	1.9604	145.61	55.061
11.000	4.6094	2.5853	190.61	100.061
12.000	5.0880	3.2006	201.00	145.061
13.000	5.5120	3.6120	201.00	190.061
14.000	5.9360	3.8985	201.00	201.000
15.000	6.3600	4.1400	201.00	201.000
16.000	6.3600	4.1400	201.00	201.000
17.000	6.3600	4.1400	201.00	201.000
18.000	6.3600	4.1400	201.00	201.000
19.000	6.3600	4.1400	201.00	201.000
20.000	6.3600	4.1400	201.00	201.000

Note :

AFIR : Yield of high yielding varieties

BFIR : Yield of local varieties

YFAT : Volume of fertilizer to high yielding varieties

LFAT : Volume of fertilizer to local varieties

DYNAM0 (REV.1) BURMA AGRICULTURAL M0DEL RUN N0. 8

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TIME	HMD	LMD	AINP	BINP
E+00	E+00	E+00	E+00	E+00
0.0000	3.1763	1.5125	79.841	7.9841
1.0000	3.2004	1.5141	81.593	8.1593
2.0000	3.1487	1.5106	77.831	7.7831
3.0000	3.4320	1.5302	98.460	9.8460
4.0000	3.4615	1.5322	100.610	10.0610
5.0000	3.4615	1.5322	100.610	10.0610
6.0000	3.4615	1.5322	100.610	10.0610
7.0000	3.4615	1.5322	100.610	10.0610
8.0000	3.4615	1.5322	100.610	10.0610
9.0000	3.4615	1.5322	100.610	10.0610
10.000	3.4615	1.5322	100.610	10.0610
11.000	3.8077	1.6584	100.610	10.0610
12.000	4.1538	1.7846	100.610	10.0610
13.000	4.5000	1.9108	100.610	10.0610
14.000	4.8461	2.0370	100.610	10.0610
15.000	5.1923	2.1631	100.610	10.0610
16.000	5.1923	2.1631	100.610	10.0610
17.000	5.1923	2.1631	100.610	10.0610
18.000	5.1923	2.1631	100.610	10.0610
19.000	5.1923	2.1631	100.610	10.0610
20.000	5.1923	2.1631	100.610	10.0610

Note :

HMD : Yield of high yielding varieties

LMD : Yield of local varieties

AINP : Volume of fertilizer to high yielding varieties

BINP : Volume of fertilizer to local varieties

DYNAMO (REV. 1) BURMA AGRICULTURAL MODEL RUN NO.

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(Unit : Million ha)

TIME	CHYV	DHYV	FJAA	AHDD	CSPH	AHYV	BHYV	FJBU	EHYV	AXPD
E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
0.0000	0.57200	0.19202	0.7640	4.3260	5.0900	0.5720	0.19202	0.7640	4.3260	5.0900
1.0000	0.67000	0.22492	0.8949	4.2851	5.1800	0.6700	0.22492	0.8949	4.2851	5.1800
2.0000	0.81800	0.27460	1.0926	4.1074	5.2000	0.8180	0.27460	1.0926	4.1074	5.2000
3.0000	0.73800	0.24775	0.9857	4.0943	5.0800	0.7380	0.24775	0.9857	4.0943	5.0800
4.0000	0.80100	0.26890	1.0699	4.0801	5.1500	0.8010	0.26890	1.0699	4.0801	5.1500
5.0000	0.80100	0.26890	1.0699	4.0801	5.1500	0.8790	0.29508	1.1741	4.0034	5.1775
6.0000	0.80100	0.26890	1.0699	4.0801	5.1500	0.9570	0.32126	1.2783	3.9267	5.2050
7.0000	0.80100	0.26890	1.0699	4.0801	5.1500	1.0350	0.34745	1.3824	3.8500	5.2325
8.0000	0.80100	0.26890	1.0699	4.0801	5.1500	1.1130	0.37363	1.4866	3.7734	5.2600
9.0000	0.80100	0.26890	1.0699	4.0801	5.1500	1.1910	0.39982	1.5908	3.6967	5.2875
10.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.2690	0.42600	1.6950	3.6200	5.3150
11.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.3470	0.45219	1.7992	3.5433	5.3425
12.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.4250	0.47837	1.9034	3.4666	5.3700
13.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.5030	0.50456	2.0076	3.3899	5.3975
14.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.5810	0.53074	2.1117	3.3133	5.4250
15.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.6590	0.55693	2.2159	3.2366	5.4525
16.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.7370	0.58311	2.3201	3.1599	5.4800
17.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.8150	0.60930	2.4243	3.0832	5.5075
18.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.8930	0.63548	2.5285	3.0065	5.5350
19.000	0.80100	0.26890	1.0699	4.0801	5.1500	1.9710	0.66166	2.6327	2.9298	5.5625
20.000	0.80100	0.26890	1.0699	4.0801	5.1500	2.0490	0.68785	2.7368	2.8532	5.5900

Note :

1. CHYV = Past and present fertilized acreage to high yielding varieties.
2. DHYV = Past and present fertilized acreage to local varieties.
3. FJAA = CHYV + DHYV
4. AHDD = Past and present non-fertilized acreage to local varieties.
5. CSPH = FJAA + AHDD
6. AHYV = Future fertilized acreage to high yielding varieties.
7. BHYV = Future fertilized acreage to local varieties.-
8. FJBU = AHYV + BHYV
9. EHYV = Non-fertilized acreage to local varieties.
10. AXPD = FJBU + EHYV

DYNAMIC SIMULATION ON MEAT PRODUCTION AND VALANCE

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL RUN NO. 1

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TIME	TPOPU	MDED	MSUP	MBAL	ANEXP
E+00	E+00	E+00	E+00	E-05	E-05
0.0000	28.890	0.10111	0.10981	869.7	869.7
1.0000	29.521	0.10332	0.10981	648.8	648.8
2.0000	30.170	0.10559	0.11264	704.2	704.2
3.0000	30.834	0.10792	0.11559	767.1	767.1
4.0000	31.512	0.11029	0.11868	838.6	838.6
5.0000	32.206	0.11272	0.12191	918.9	918.9
6.0000	32.915	0.11520	0.12529	1009.2	1009.2
7.0000	33.640	0.11774	0.12884	1110.1	1110.1
8.0000	34.381	0.12033	0.13256	1222.5	1222.5
9.0000	35.138	0.12298	0.13646	1347.6	1347.6
10.000	35.925	0.12574	0.14055	1481.5	1481.5
11.000	36.730	0.12855	0.14485	1629.7	1629.7
12.000	37.553	0.13144	0.14937	1793.5	1793.5
13.000	38.394	0.13438	0.15412	1974.1	1974.1
14.000	39.267	0.13743	0.15912	2168.2	2168.2
15.000	40.160	0.14056	0.16437	2381.5	2381.5
16.000	41.073	0.14376	0.16991	2615.6	2615.6
17.000	42.008	0.14703	0.17575	2871.7	2871.7
18.000	43.001	0.15050	0.18189	3139.1	3139.1
19.000	44.017	0.15406	0.18838	3431.8	3431.8
20.000	45.057	0.15770	0.19522	3751.9	3751.9

Note :

TPOPU : Total population
(Numbers in million)

MDED : Meat demand
(Million ton)

MSUP : Meat consumption
(Million ton)

MBAL : Balance
(Million ton)

ANEXP : Export
(Million ton)

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL

RUN NO. 1

(Numbers in million)

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TIME	ANIMAL (1)	ANIMAL (2)	ANIMAL (3)	ANIMAL (4)
E+00	E+00	E+00	E+00	E+00
0.0000	7.2670	1.6460	1.4610	15.682
1.0000	7.3542	1.6625	1.5589	15.933
2.0000	7.4425	1.6791	1.6633	16.188
3.0000	7.5318	1.6959	1.7748	16.447
4.0000	7.6221	1.7128	1.8937	16.710
5.0000	7.7136	1.7300	2.0206	16.977
6.0000	7.8062	1.7473	2.1559	17.249
7.0000	7.8998	1.7647	2.3004	17.525
8.0000	7.9946	1.7824	2.4545	17.805
9.0000	8.0906	1.8002	2.6190	18.090
10.000	8.1877	1.8182	2.7944	18.380
11.000	8.2859	1.8364	2.9817	18.674
12.000	8.3854	1.8548	3.1814	18.973
13.000	8.4860	1.8733	3.3946	19.276
14.000	8.5878	1.8920	3.6220	19.585
15.000	8.6909	1.9110	3.8647	19.898
16.000	8.7952	1.9301	4.1236	20.216
17.000	8.9007	1.9494	4.3999	20.540
18.000	9.0075	1.9689	4.6947	20.868
19.000	9.1156	1.9885	5.0093	21.202
20.000	9.2250	2.0084	5.3449	21.541

Note :

(1) : Cattle

(2) : Buffalo

(3) : Pig

(4) : Fowls

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL

RUN NO. 1

(Numbers in million)

*** プリント リスト ***

TIME	BREED (1)	BREED (2)	BREED (3)	BREED (4)
E+00	E-05	E-05	E+00	E+00
0.0000	8720.4	1646.0	0.09789	0.25091
1.0000	8825.0	1662.5	0.10445	0.25493
2.0000	8930.9	1679.1	0.11144	0.25901
3.0000	9038.1	1695.9	0.11891	0.26315
4.0000	9146.6	1712.8	0.12688	0.26736
5.0000	9256.3	1730.0	0.13538	0.27164
6.0000	9367.4	1747.3	0.14445	0.27598
7.0000	9479.8	1764.7	0.15413	0.28040
8.0000	9593.6	1782.4	0.16445	0.28489
9.0000	9708.7	1800.2	0.17547	0.28944
10.000	9825.2	1818.2	0.18723	0.29408
11.000	9943.1	1836.4	0.19977	0.29878
12.000	10062.4	1854.8	0.21316	0.30356
13.000	10183.2	1873.3	0.22744	0.30842
14.000	10305.4	1892.0	0.24268	0.31335
15.000	10429.0	1911.0	0.25894	0.31837
16.000	10554.2	1930.1	0.27628	0.32346
17.000	10680.8	1949.4	0.29479	0.32864
18.000	10809.0	1968.9	0.31455	0.33389
19.000	10938.7	1988.5	0.33562	0.33924
20.000	11070.0	2008.4	0.35811	0.34466

Note :

(1) : Cattle

(2) : Buffalo

(3) : Pig

(4) : Fowls

DYNAMO (REV.1) BURMA AGRICULTURAL MODEL

RUN NO. 1
(Numbers in million)

*** プリント リスト ***

TIME	MMSP (1)	MMSP (2)	MMSP (3)	MMSP (4)
E+00	E+00	E-05	E+00	E+00
0.0000	0.24708	5596.4	0.4967	39.519
1.0000	0.25004	5652.4	0.5300	40.151
2.0000	0.25304	5708.9	0.5655	40.793
3.0000	0.25608	5766.0	0.6034	41.446
4.0000	0.25915	5823.6	0.6439	42.109
5.0000	0.26226	5881.9	0.6870	42.783
6.0000	0.26541	5940.7	0.7330	43.467
7.0000	0.26859	6000.1	0.7821	44.163
8.0000	0.27182	6060.1	0.8345	44.870
9.0000	0.27508	6120.7	0.8904	45.587
10.000	0.27838	6181.9	0.9501	46.317
11.000	0.28172	6243.7	1.0138	47.058
12.000	0.28510	6306.2	1.0817	47.811
13.000	0.28852	6369.2	1.1542	48.576
14.000	0.29199	6432.9	1.2315	49.353
15.000	0.29549	6497.2	1.3140	50.143
16.000	0.29904	6562.2	1.4020	50.945
17.000	0.30262	6627.8	1.4960	51.760
18.000	0.30626	6694.1	1.5962	52.588
19.000	0.30993	6761.1	1.7032	53.430
20.000	0.31365	6828.7	1.8173	54.285

Note :

(1) : Cattle

(2) : Buffalo

(3) : Pig

(4) : Fowls

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