PRELIMINARY SURVEY REPORT
ON
AGRICULTURAL DEVELOPMENT
IN
REPUBLIC OF NIGERIA

August 1976

JAPAN INTERNATIONAL COOPERATION AGENCY

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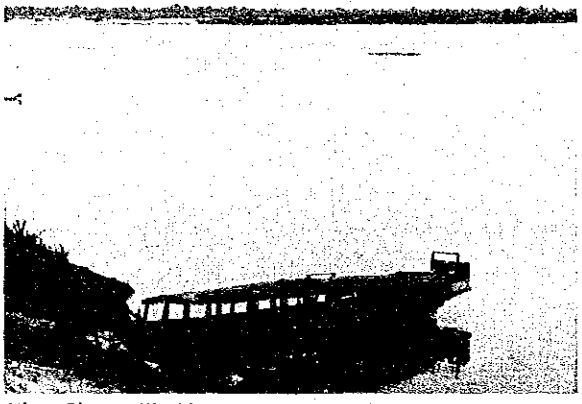
ATTACHED PHOTOGRAPHS

(Taken by suvey team)

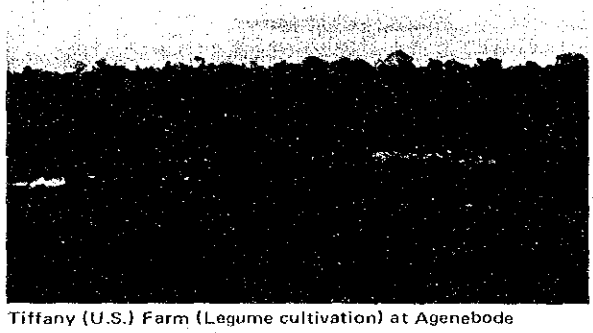
BENDEL STATE

Farmers' upland rice Project at Illushi

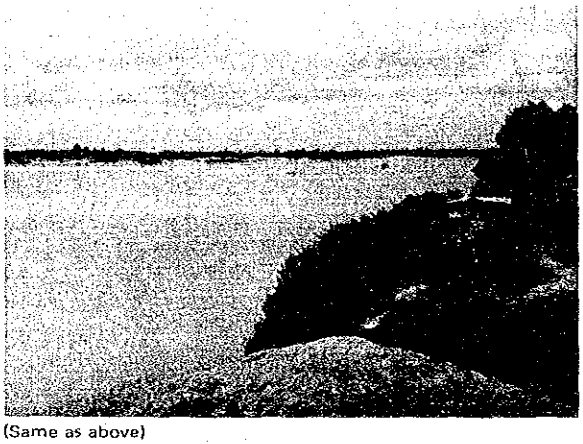
(Same as left)



Niger River at Illushi



Tiffany (U.S.) Farm (Legume cultivation) at Agenebode



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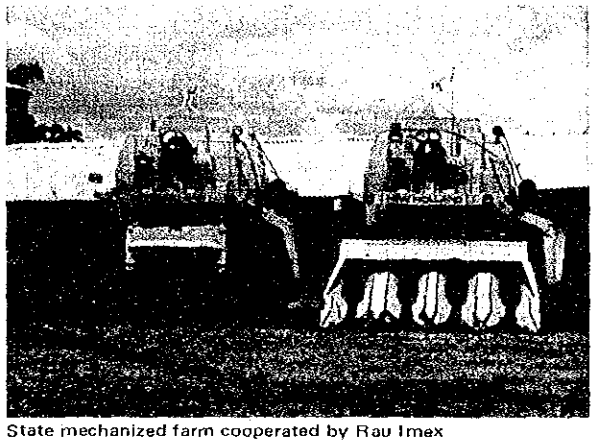
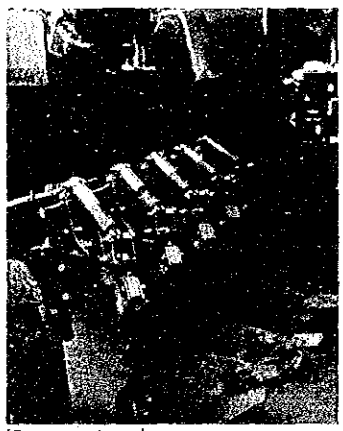


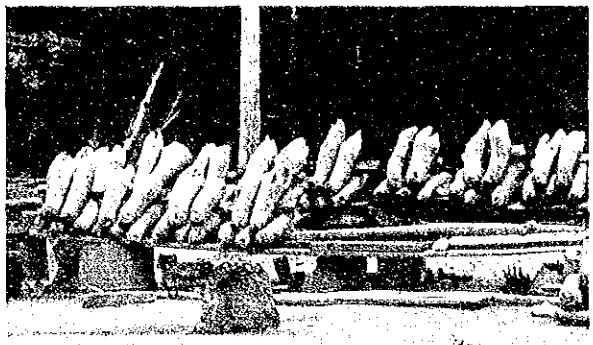
State mechanized farm cooperated by Rau Imex (West Germany) at Agbode

(Same as right)



(Same as above)

Discussion at state mechanized farm



Yam beside a street for sale

IMO STATE

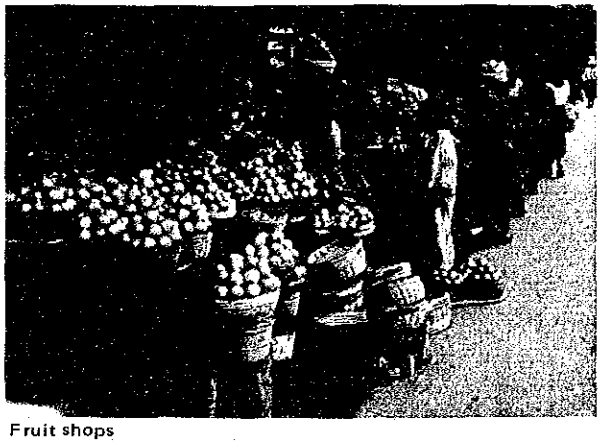
Shea-nuts

Proposed weir site on Oramiriukwa River

Imo River in suburbs of Aba

At a corner of a market

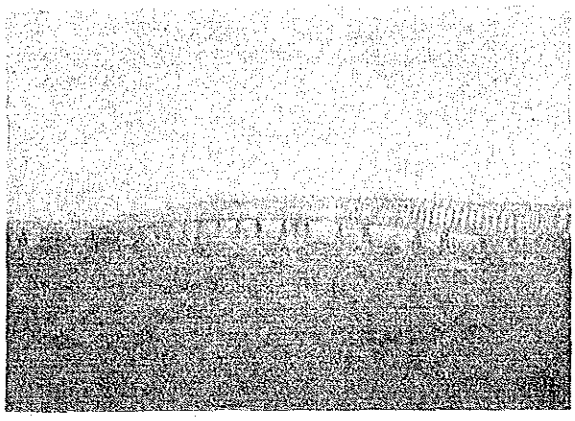
BADEGGI



Fruit shops

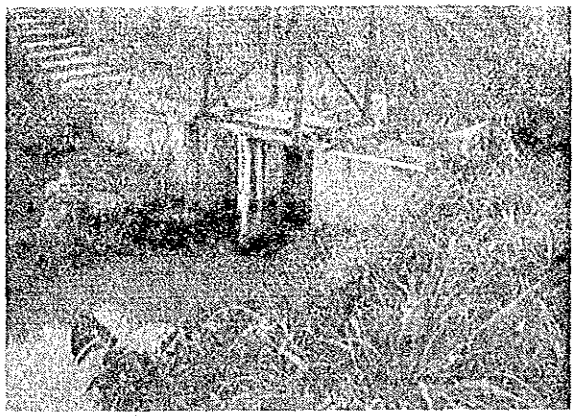
The Second meeting in Federal Department of Agriculture (FDA), Lagos

ANAMBRA STATE

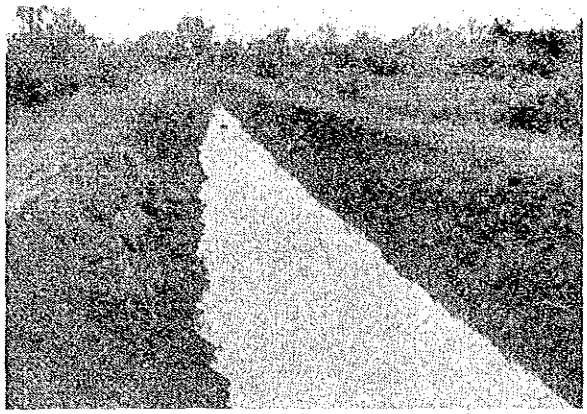


Long bridge across Niger River between Bendel State and Anambra State

Road to Adani from Enugu

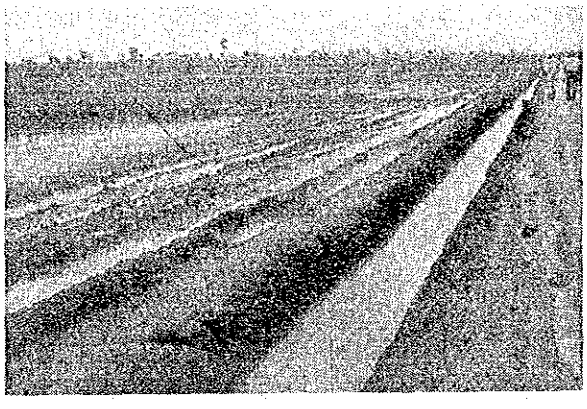


Diversion works for Uzo Uwani Pioneer Project



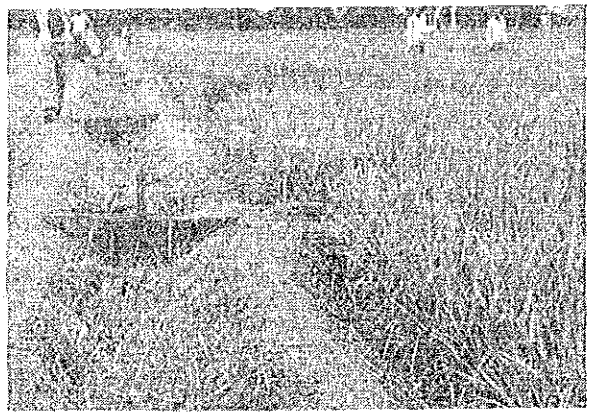
Driving canal for the Project

Paddy field construction



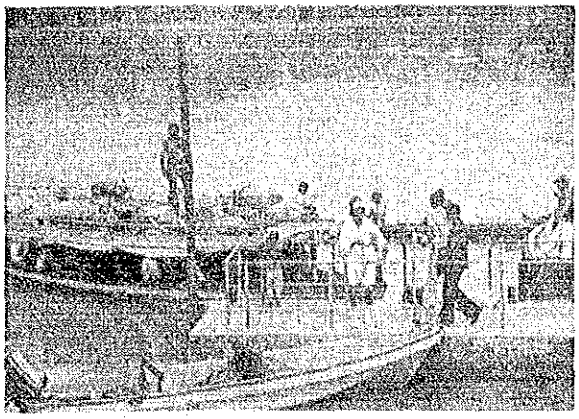
Completed paddy fields and canal

Nursery bed construction



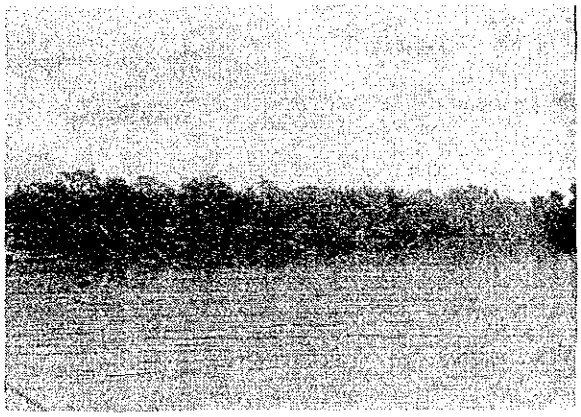
Experimental farm for the Project

RIVERS STATE



At port of Yenagoa

On the way to Peremabiri Irrigation Project



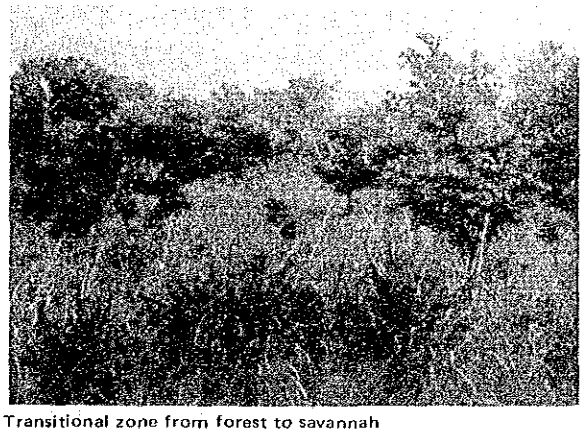
On a tributary of Nun River

Intake site of Peremabiri
Irrigation Project

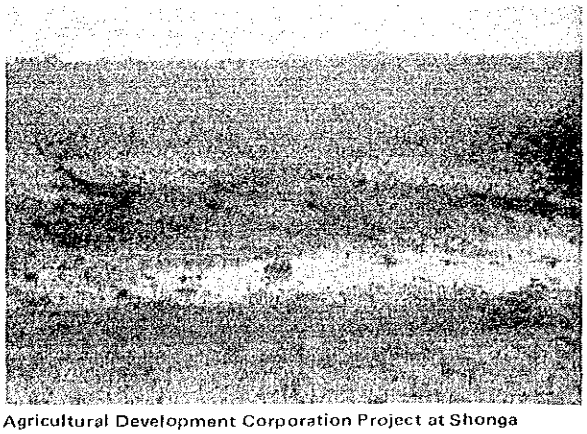
Irrigation Pump for the Project

Existing irrigated area and dykes
in Peremabiri Irrigation Project

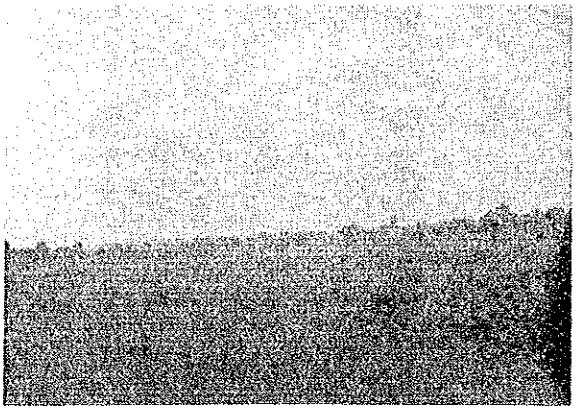
KWARA STATE



Transitional zone from forest to savannah

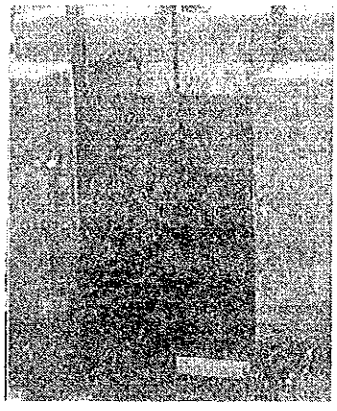


Agricultural Development Corporation Project at Shonga

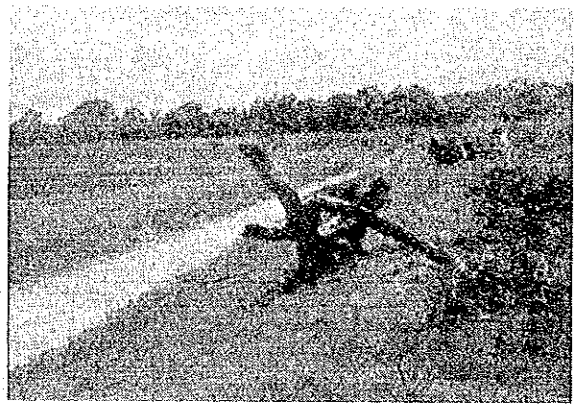


Shonga Todo Rice Project owned by the State

Polder and fields

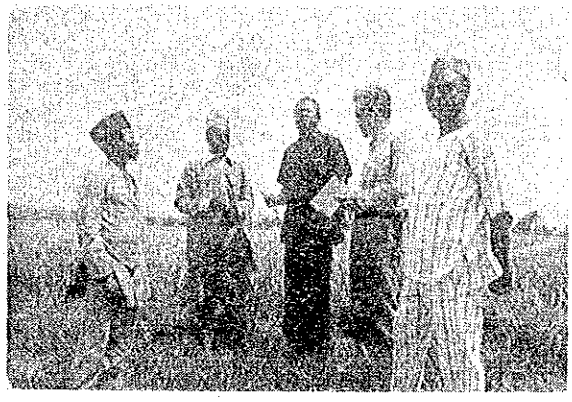


Intake gate for the Project

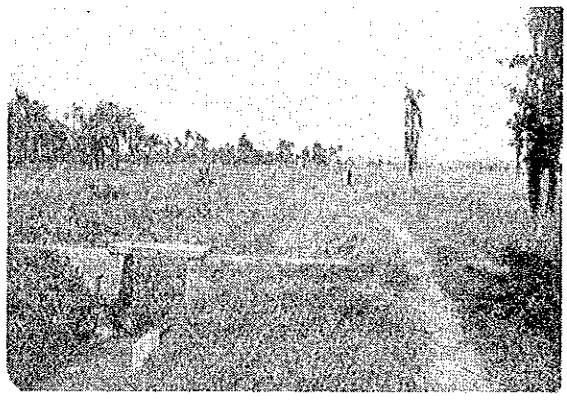


Irrigation canal for the Project

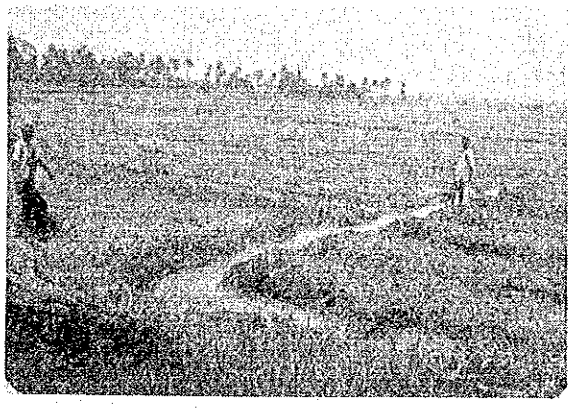
NIGER STATE



Interview with farmers in Edozhigi Rice Farm owned by the State



Irrigation canal and gate



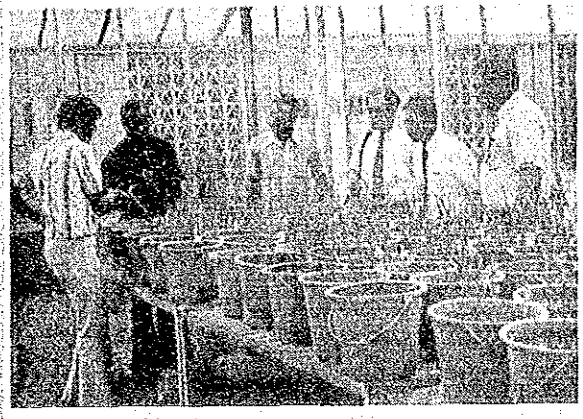
Land preparation

(Same as left)

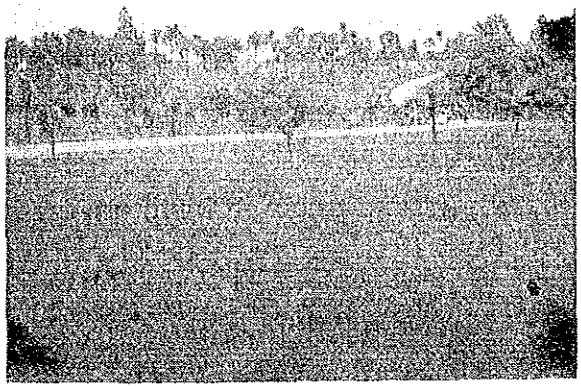
Child vendors

Selling a bowl of rice

IITA



In experimental house



In compound of IITA

BADEGGI

In Fields of Federal Rice Research Station, Badeggi

With a research officer and a counterpart

With the Japanese Ambassador to Nigeria, at his residence

FOREWORD

At the request of the Federal Government of Nigeria particularly for technical cooperation on Rice Production Increase Program in Food Reservation Plan in Nigeria within the frame of the Third Five Year Development Plan from 1975 to 1980; Japan International Cooperation Agency (JICA) dispatched a preliminary survey team to Nigeria, consisting of five members headed by Mr. J. Kitamura, Head of Development Planning Division for Agriculture and Forestry, JICA for four weeks from May 14 to June 10, 1976, in order to perform the following scope of works;

1) To verify the concrete contents of the request for the technical cooperation.

2) To grasp the existing conditions of the agricultural development in Nigeria and the included problems.

3) To find out the immediately applicable means under the current Japanese technical cooperation system.

4) To select appropriate sites for irrigated paddy cultivation according to the given conditions.

5) Others

The report on the result of the survey will be submitted herewith, after the examination in accordance with the comments on the interim report submitted just before the team's return from Nigeria. It is my belief that this report be of use for the preparation of the next feasibility study to be carried out soon.

I take this opportunity to express my hearty gratitude to the officials in the authorities concerned of the Federal and the State Governments of Nigeria for their whole-hearted support and cooperation extended to the team, and I sincerely wish that our mutual efforts will serve to strengthen the closer relation-ship between the Federal Republic of Nigeria and Japan.

August, 1976

Shinsaku HOGEN
President
Japan International Cooperation Agency

Fig. 1. Map of Republic of Nigeria
1 : 8,000,000

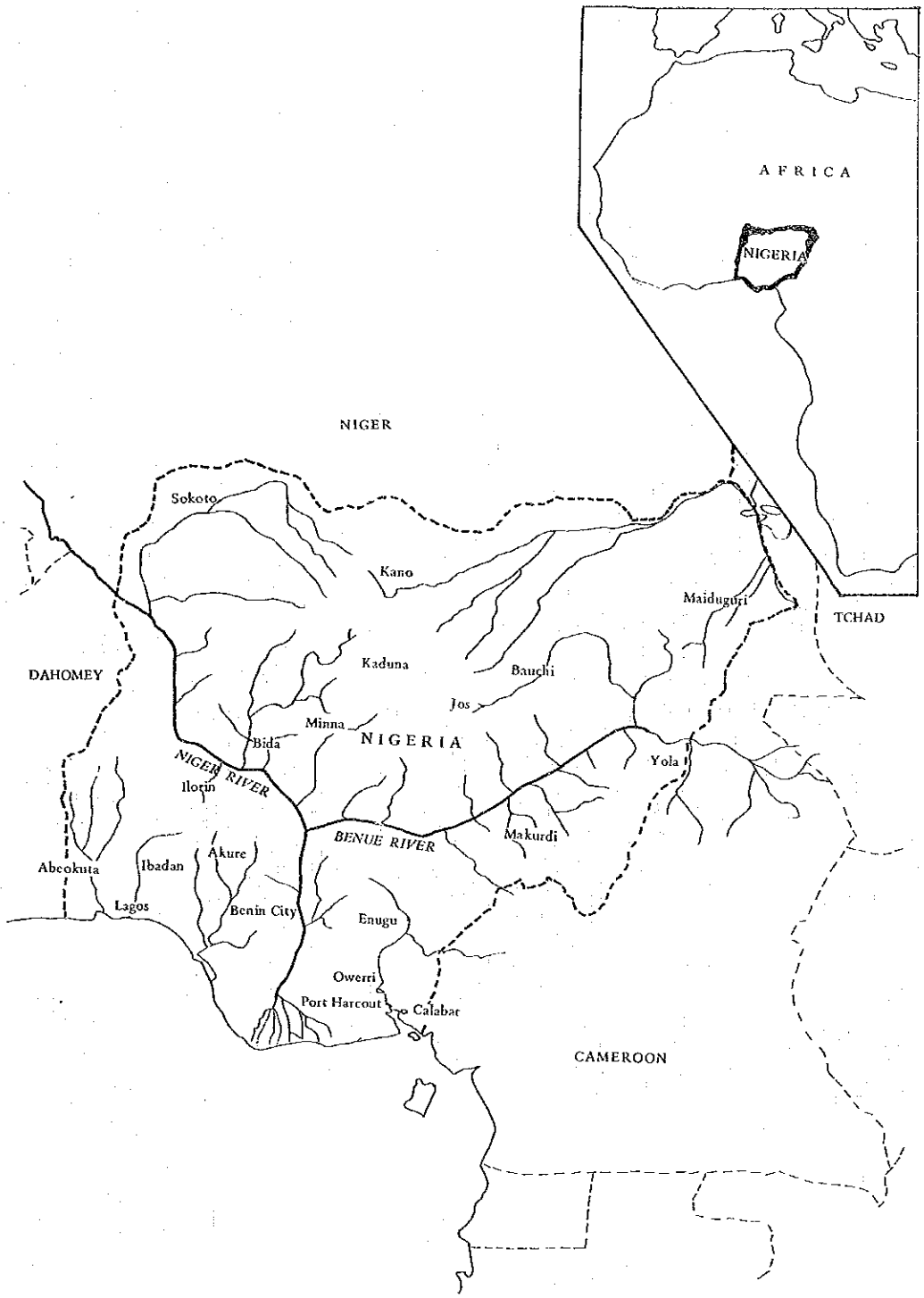
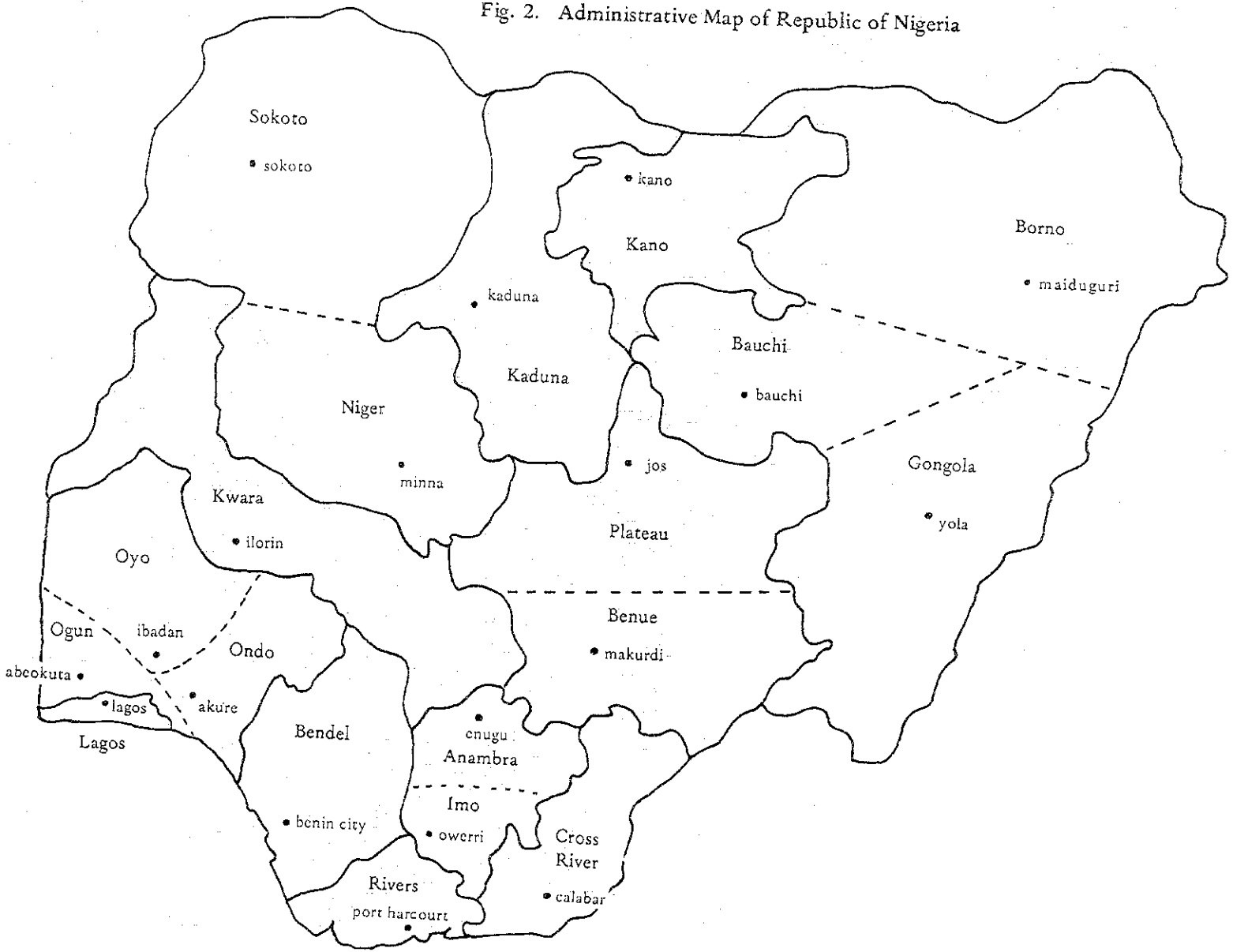


Fig. 2. Administrative Map of Republic of Nigeria



CONTENTS

I. INTRODUCTION

1. Objectives of the Survey

With the view to accomplishing its Third Five-Year National Development Programme (April 1975 ~ March 1980), the Federal Government of the Republic of Nigeria requested Japan's technical cooperation in the agricultural development in Nigeria. According to this request, the Government of Japan undertook to conduct a preliminary survey and established the following survey objectives.

(1) To verify the detailed contents of the request of the Nigerian government.

(2) To offer a detailed explanation on Japan's international technical cooperation system to the Nigerian government.

(3) To grasp the present condition and the existing problems in the agricultural development of Nigeria, and to study the progress of the technical cooperation offered by third countries.

(4) To find out the means and course of technical cooperation that can be implemented immediately under the above-mentioned system.

(5) To select suitable rice cultivation areas in conformity to the request of the Nigerian government, on the premise that the technical cooperation will be offered with primary consideration given to the promotion of irrigated rice culture.

2. Background of the Survey

Since her independence in 1960, Nigeria has completed the First and Second Five-Year National Development Programmes, and embarked upon the Third Five-Year Programme in 1975 with redoubled efforts exerted for the development of many different sectors such as agriculture, industry, transportation, communications, regional development, education, health, labour, public welfare, and so forth.

Nigeria has a population of about 70 million which is increasing at an annual rate of 2.5%. Agriculture therefore constitutes the most importatint industrial sector in the country, and ceaseless endeavours have been made for its development over the past years. However, the production of main food crops such as rice, maize, sorghum, millet, cassava and yams has not always been large enough to meet the national demand, and has often been subject to a large seasonal and regional fluctuation. During the bottom of harvest which is commonly called the "hunger season," many states suffer from the food shortage nearly each year. It is known that an acute shortage of foodstuffs was experienced during the last internal disturbances. On ac-

count of her growing population, overcongestion of urban areas and changes in the people's dietary life, Nigeria is pressed hard for improved food suppply in both quantity and quality. It is expected that the coming years see greater demand for maize, millet, sorghum, yams, rice, wheat, groundnuts, vegetables and fruits. In particular, apprehension is entertained that the production of rice, wheat, vegetables and fruits will fall far short of demand in future.

Against this background, the Nigerian government appropriated a total of 2,200 million nairas (approx. 3,700 million U.S. dollars) for the development of agriculture, forestry and fishery to be implemented under the Third Five-Year National Development Programme in order to take off from the existing low production level. This budgetary appropriation covers the expenses for surveys to be conducted to improve the rice cultivation practices as well as for rice production plans to be worked out for respective regions.

Thus, the Third Five-Year Programme incorporates concrete plans for increased agricultural production which the Nigerian government is hoping to put in action within two years as emergency measures to cope with the prevailing food situation. To be more specific, the Federal government is planning to establish at least one large plantation (5,000 ~ 10,000 acres) in each state where rice can be grown, and has requested that the Japanese government or a suitable Japanese corporation cooperate in this plan by introducing Japan's advanced rice cultivation techniques and farm machinery. Under this plan, the Nigerian government will bear the land acquisition cost and all other expenses required for the creation and operation of new plantations, and Japan is expected to provide the experts' services and necessary machines and equipment and to offer guidance in the management of the plantations. It is also envisaged by the plan that the government will purchase farm machinery and fertilizers and offer them to farmers at low cost under a subsidized distribution system, and will further take part in the processing and storage of the entire rice yield to be purchased from the farmers. Hence, Japan is expected to extend technical cooperation in the field of processing and storage.

While pointing out that there are no budgetary limits set to the proposed plan, the Nigerian government is hoping that Japan will dispatch an adequate number of agricultural experts (incl. those specialized in processing and storage of rice) to Nigeria at an earliest possible date for selection of suitable rice cultivation areas and for formulation of plans for production increase and feasibility study. In its request for technical cooperation, the Nigerian government gives priority to paddy rice over other types of rice cultivation and expects that Japan will offer guidance and advice in the management of the plantations on the strength of the said feasibility study.

The Nigerian government repetitively expressed its hope to put the plan into action as soon as possible with the positive cooperation of Japan without spending too much time to discuss about the problems entailed in the increase of rice production.

The present preliminary survey was carried out on the background described above.

3. Formation of the Survey Mission

The survey mission comprised the following members.

Name	Assignment	Affiliation
Junichi KITAMURA	Leader (Technical cooperation)	Head of Development Planning Division for Agriculture and Forestry, Japan International Cooperation Agency (JICA)
Kiichi WATANABE	Member (Agronomy)	Special part-time employee, JICA
Junji INOUE	Member (Irrigation engineering)	Deputy of Cultivated Land Division, Department of Agriculture and Forestry, Osaka Prefectural Government
Tatsuya IKEDA	Member (Agro-economy)	Deputy of Planning Division, Kanto Regional Administration Bureau, Ministry of Agriculture and Forestry
Yoshihiro MINE	Member (Coordination)	Staff of Technical Affairs Division for Agriculture and Forestry, JICA

4. Survey Itinerary

The itinerary of the survey mission was as outlined below in Table 1.

Table 1. Itinerary of Survey Mission

Date and Day	Place of Overnight Stay	Description
		(Advance party)
May 14, Fri.	Frankfurt	Departure from Tokyo and arrival at Frankfurt (JL 447).
15, Sat.	In flight	Departure from Frankfurt (LH 562).

Date and Day	Place of Overnight Stay	Description
May 16, Sun.	Lagos	Arrival at Lagos; Courtesy call made on Japanese Embassy in Lagos in the evening.
17, Mon.	Lagos	First joint meeting attended by the Permanent Secretary of the Federal Ministry of Agriculture/ Rural Development, Director of Federal Department of Agriculture, and his staffs, councellor and Secretary of the Japanese Embassy, and the Survey Mission.
18, Tue.	Lagos	Data collection at the Federal Office of Statistics and other agencies.
19, Wed.	Lagos	Data collection at the Federal Office of Statistics, Meteorological Department, and Map depot of the Federal Ministry of Works and Housing.
20, Thu.	Lagos	Data collection at Map depot of the Federal Ministry of Works and Housing.
21, Fri.	Lagos	Visits to National Cereals Research Institute and International Institute of Tropical Agriculture for collection of agronomical data.
		(second party)
	Frankfurt	Departure from Tokyo and arrival at Frankfurt (JL 447)
22, Sat.	Frankfurt	(Advance party) Intra-party discussion and data analysis.
	In flight	(Second party) Departure from Frankfurt (LH 562).
23, Sun		(Second party) Arrival at Lagos early in the morning.
		(All mission members)

Date and Day	Place of Overnight Stay	Description
May 23, Sun.	Benin city	Departure for Benin city in the afternoon.
24, Sun.	Benin city	Visits to and data collection at Benin city branch of the Federal Department of Agriculture and Bendel State Ministry of Agriculture and Natural Resources; Visits to the Small Holders' Rice Project at Illushin, Tiffany Farm at Agnebode (from U.S.) and Rau Imex Mechanized Upland Rice and Maize Production Project (from West Germany) in the Orle-Edison Basin. Inspection of the flow condition of the Niger River.
25, Tue.	Adani	Trip to Adani via Enugu in Anambra state; Visit to Uzo Uwani Pioneer Irrigation Project implemented at Adani with Nippon Koei's cooperation.
26, Wed.	Enugu	Explantion given on the Uzo Uwani Project; Inspection of the experimental farm, land clearance work and irrigation faiclities in the Uzo Uwani project area; Trip to Enugu to visit and collect data at Enugu branch of the Federal Department of Agriculture and Anambra State Ministry of Agriculture and Natural Resources.
27, Thu.	Port Harcourt	Trip to Owerri to visit Imo State Ministry of Agriculture and Natural Resources for data collection; Return to Port Harcourt after inspection of the Oramiriukwa river basin.
28, Fri.	Port Harcourt	Intra-mission arrangements and discussion (morning); Visits to Port Harcourt branch of the Federal Department of Agriculure and to Rivers State Ministry of Agriculture and Natural Resources for interview with the Minister and Permanent

Date and Day	Place of Overnight Stay	Description
		Secretary and data collection (afternoon).
May 29, Sat.	Port Harcourt	Visit to the Pere Mabiri Rice Production Project area by boat via Yenagoa for inspection.
30, Sun.	Benin city	Trip to Benin city from Port Harcourt; Preparation of the interim report.
31, Mon.	Ilorin	Trip from Benin-city to Ilorin; Preparation of the interim report.
Jun 1, Tue.	Ilorin	Visits to Ilorin branch of the Federal Department of Agriculture and to Kwara State Ministry of Agriculture and Natural Resources for data collection and interview with the Permanant Secretary; Visit to the Shonga-Todo Rice Project area for inspection; Intra-mission arrangement and discussion (evening).
2, Wed.		(The mission was divided into the first and second groups)
	Bida	(1st Group) Trip from Ilorin to Ibadan to visit Ibadan branch of the Federal Department of Agriculture for data collection.
	Ibadan	(2nd Group) Trip from Ilorin to Ibadan to visit Ibadan branch of the Federal Department of Agriculture; Inspection of the International Institute of Tropical Agriculture, with arrangements made for an interview with its agro-economist.

Date and Day	Place of Overnight Stay	Description
Jun. 3, Thu.	Ilorin	(1st Group) Trip to Badeggi to visit the Federal Rice Research Station for collection of data and inspection of the experimental farm. Return to Ilorin after inspecting the Edozhigi Rice Project area completed in Edozhigi devision in the lower reaches of the Kaduna river.
	Ibadan	(2nd Group) Interview with the agro-economist at the International Institute of Tropical Agriculture; Visit to the National Cereals Research Institute; Collection of agro-economic data at both institutes.
4, Fri.	Lagos	(1st Group) Trip from Ilorin to Lagos.
	Lagos	(2nd Group) Visit to the library and bookstore within the compound of Ibadan University for data collection; Trip to Lagos.
5, Sat.	Lagos	Intra-mission arrangements and discussion; Completion of the draft of the interim report
6, Sun.	Lagos	Survey results reported to the Secretary of Japanese Embassy
7, Mon.	Lagos	Final joint meeting at which the survey results were reported to the Nigerian officials concerned including the Director of Rural Development and Chief Agriculture Officer

8, Tue.	Paris	Departure from Lagos and arrival at Paris (UT 782)
9, Wed.	In flight	Departure from Paris (JL 440)
10, Thu.	Tokyo	Arrival at Tokyo.

Notes: See Fig. 3 for the route of the mission's site survey

5. Acknowledgement and Personnel Concerned in Nigeria

The mission is much indebted to the many personnel for the valuable assistance given it throughout the survey period. The names of the main personnel concerned in Nigeria are given below.

1) Counterpart

Mr. M.L. Ezewele	Agricultural Planning Officer	Federal Department of Agriculture, Nigeria

2) Other personnel concerned

See Table 2.

Fig. 3. Site Survey Route

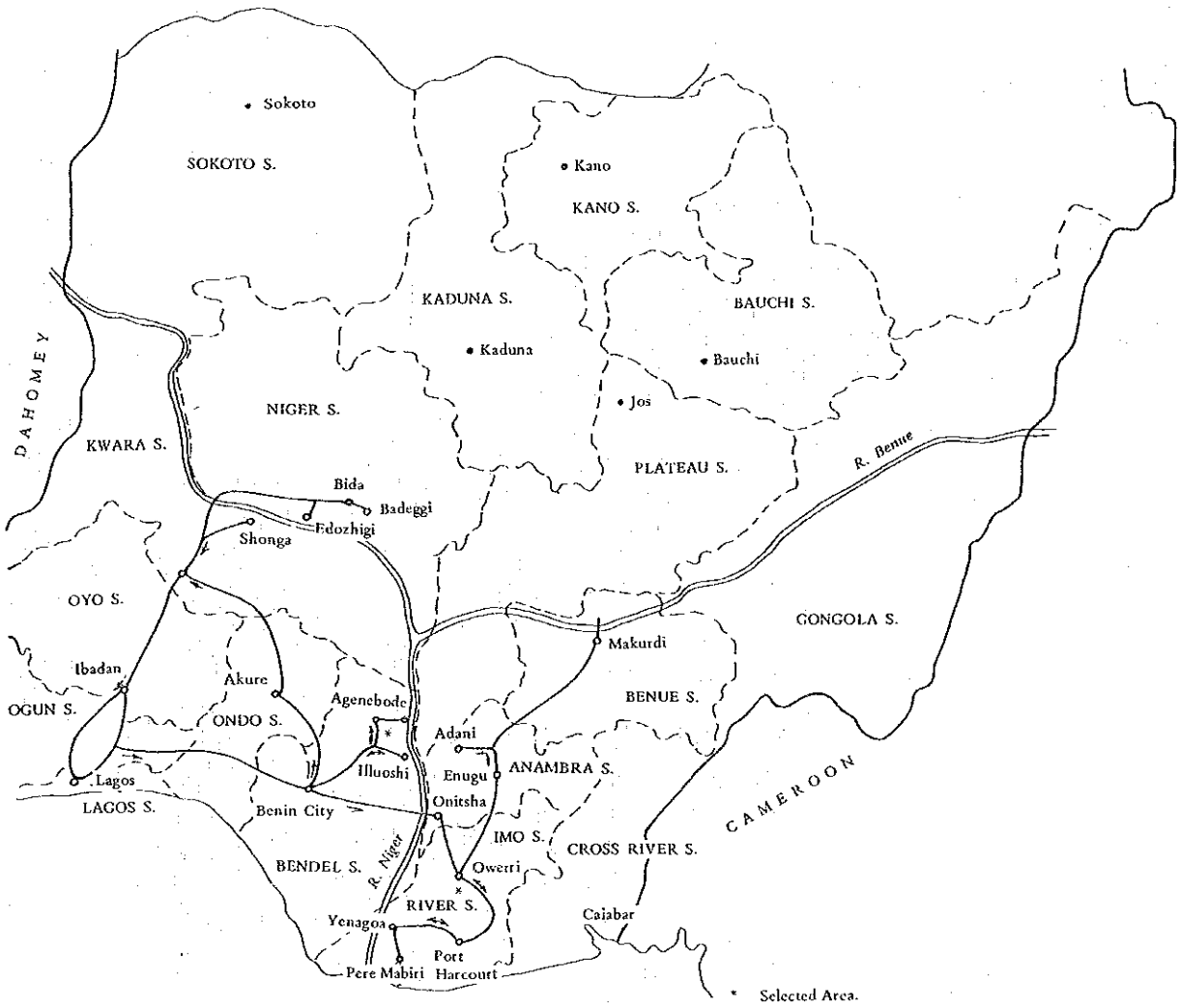


Table 2. List of Personnel Concerned in Nigeria

At Ministry of Agriculture, Lagos, Nigeria, on 18/5/'76 and on 7/6/'76;

Mr. R.S. Oloruntoba	Permanent Secretary	Federal Ministry of Agriculture 34/36 Ikoyi Road, P.M.B. 12613 Lagos, Nigeria
Mr. Abuaji Lime	Director of Agriculture	Federal Department of Agriculture
Mr. J.A. Eweka	Director of Rural Development	Federal Department of Agriculture
Mr. A.A. Ajiborisha	Information Officer	Federal Ministry of Agriculture/Rural Development
Mr. J.O. Ezenwafor	Senior Assistant Secretary	Federal Ministry of Agriculture/Rural Development
Mr. O. Awayemi	Chief Agriculture Officer	Federal Ministry of Agriculture/Rural Development
Mr. L.O. Ologide	Agriculture Officer 1	Federal Dept. of Agriculture, Lagos

At Lagos;

Mr. Adedeji	Statistician 1	Federal Office of Statistics, Lagos
Mr. A.O. Awonuga	Senior Statistical Officer	Federal Office of Statistics 7, Okotie-Ebor Street, Ikoyi–Lagos, Nigeria
Mr. S.O. Adeyinka	Chief Statistician	Federal Office of Statistics 7, Okotie-Ebor Street, Ikoyi–Lagos, Nigeria

Mr. C.A. Igeleke	Agro-meteorologist	Meteorological Dept., Headquarters, Lagos, Nigeria
Mr. B.A. Atitebi-John	Senior Meteorological Superintendent	Federal Ministry of Civil Aviation

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At Ibadan;

Mr. OLU. Oyatobo	Senior Agric. Officer	F.D.A. P.M.B. 5471 Ibadan, Nigeria
Dr. S.D. Agboola	Deputy Director	N.C.R.I. P.M.B. 5042, Moor Plantation, Ibadan
Dr. V.A. Awoderu	Principal Research Officer	National Cereals Research Institute
Mr. M.A. Akintomide	Director for Administration	International Institute of Tropical Agriculture
Dr. Zia Siddiqi	Entomologist	Oyo Road, P.M. 5320, Ibadan
Dr. K. Alluri	Physiologist/Agronomist	Oyo Road, P.M. 5320, Ibadan
Mr. Clay Onah	Conference Coordinator & Head of Visitors' Center	Oyo Road, P.M. 5320, Ibadan

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At Benin City;

Mr. C.O. Oranyeli	Chief Agric. Officer	M.A.N.R. P.M.B. 1060, Benin City
Mr. A.O. Ojemen	Deputy Chief Agric. Officer (i/c Agric. Services)	M.A.N.R. P.M.B. 1060, Benin City
Mr. J.E. Agbejule	Senior Agric. Officer (i/c Arable crops)	M.A.N.R. P.M.B. 1060, Benin City

Mr. O.F.J. Oyaide	Principal Agric. Officer	Federal Dept. of Agric. P.M.B. 1189, Benin City
Mr. T.O. Awoyungbo	Agric. Officer	Federal Dept. of Agric. P.M.B. 1189, Benin City
Mr. A.M. Egbuiew	Princ. Agric. Officer	M.A.N.R. Ubiaja, Bendel State
Mr. M. Neumeister	Farm Nanager (Agbede Farm)	P.O. Box 20 Agbede
Mr. Loyd Remien	Farm Manager (Tiffany Farm Agenebode)	91, Jatu Road, Auchi

Nippon Koei/Adani – 26/5/'76

Mr. Oda	General Manager	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. Y. Kamiya	Assistant General Manager	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Dr. S. Matsushima	Technical Adviser	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. T. Yamamoto	Executive Secretary	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. N. Agiga	Agronomist/Soil Chemist	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. Maeda A.	Agronomist/Soil Chemist	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria

Mr. Nakazawa S.	Mechanical Engineer	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. A. Takato	Mechanical Engineer	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
Mr. N. Takeda	Irrigation Engineer	ADARICE Production (Nigeria) Ltd. P.M.B. 1024, Enugu, Anambra State, Nigeria
At Enugu;		
Mr. O.C. Menakaya	Chief Agric. Officer	Agriculture Division, Ministry of Agric. & N.R. Enugu (P.M.B. 1003) Anambra State, Nigeria
At Owerri;		
Mr. J.C.U. Eme	Chief Agric. Officer	Ministry of Agric. & N.R. Owerri, Imo State, Nigeria
Mr. Nzerem	Deputy Perm. Secretary	Ministry of Agric. & N.R. Owerri, Imo State, Nigeria
Mr. J.O. Mgbahuryke	Irrigation Superintendent	Agric. Dept., Imo State, Owerri
Mr. J.C. Duru	Agric. Officer	Agric. Dept., Imo State, Owerri
At Port Harcourt;		
Mr. H. Osarollor	Commissioner	Rivers State Ministry of Agriculture and Natural Resources, Port Harcourt
Mr. V.A.G. Warmate	Perm. Secretary	Rivers State Ministry of Agriculture and Natural Resources, Port Harcourt

Mr. G.D.K. Briggs	Principal Agric. Officer	Rivers State Ministry of Agriculture and Natural Resources, Port Harcourt
Mr. E.O. Uwaifo	Agric. Officer	Rivers State Ministry of Agriculture and Natural Resources, Port Harcourt
Chief G.F. Aganaba	Project Manager	PABOD Food Co., Ltd., P.H. Produce House, Port Harcourt

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At Ilorin;

Mr. J.K. Saliu	Perm. Secretary	M.A.N.R., Ilorin (Kwara State)
Mr. M.S. Ayinmodu	Chief Agric. Officer	M.A.N.R., Ilorin (Kwara State)
Mr. S.I. Joseph	Principal Irrigation Engineer	M.A.N.R., Ilorin (Kwara State)
Mr. S. Koro	Principal Planning Officer	M.A.N.R., Ilorin (Kwara State)
Mr. Jimada Omar	Agric. Officer	M.A.N.R./Shonga Tada Rice Project
Mr. Joseph Oye	Senior Irrigation Officer	Lafiagi/Pategi Division
Mr. Mohamed M. Elbackly	Irrigation Engineer	Ilorin, M.A.N.R. P.M.B. 1383
Mr. S.O. Abodunde	Principal Agric. Officer	F.D.A., Ilorin, Kwara State

At Bida and Badeggi;

Mr. Aluyu A. Edogi	Divisional Agric. Officer	Ministry of Agric., Bida, Niger State
Mr. Alhaji Abdullayi Alakali	Agric. Officer	Ministry of Agric., Bida

Mr. K.A. Ayotade	Principal Research Officer i/c	Rice Research Station, Badeggi

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At I.I.T.A. and N.C.R.I.;

Dr. J.C. Flinn	Irrigation Economist	I.I.T.A.
Dr. Fred Winch	Agricultural Economist	I.I.T.A.
Mr. S.O. Fagade	Rice Agronomist	N.C.R.I.
Mr. E.C. Abah	Rice Economist	N.C.R.I.
Mr. C. Balogun	Administrative Sec.	Nigerian Institute of Social & Economic Research (NISER) P.M.B. 5, University of Ibadan

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Japanese Embassy in Lagos;

H.E. Mr. Matsui, Ambassador of Japan to Nigeria

Mr. Takase, Counsellor

Mr. Ueki, Secretary

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Nigeria Branch of C. Itoh Co., Ltd.;

Mr. Obori

Mr. Hasegawa

6. List of Collected Data

The data collected by the mission during its stay in Nigeria are shown below in Table 3.

Table 3. List of Collected Data

1. Agrometeorological Bulletin, Jan./Jun., 1975
   Published by Nigerian Meteorological Department Headquarters

2. Meteorological Note No. 14
   Temperatures and Humidities (Averages and Extremes) (1951 – 1965)
   Published by Nigeria Meteorological Services

3. Meteorological Note No. 25
   Monthly Cloud Summary Charts
   Jun. 19, 1962 by A.W. Ireland, Director, Nigerian Meteorological Service

4. Meteorological Note No. 6
   Evaporation in Nigeria, March 29, 1961 by A. Gillchrist, M.A.

5. Technical Note No. 37
   Using Potential Evaporation as a Guide to the Water Requirement of Crop
   Issued by the Nigerian Meteorological Service, 1968

6. Nigerian Meteorological Department
   Sun and Moon Tables in 1976

7. Digest of Statistics, Vol. 23
   Oct. 1974, Federal Office of Statistics, Lagos

8. Annual Abstract of Statistics, 1973
   Federal Office of Statistics, Lagos

9. Nigerian Trade Summary, December, 1974 – March, 1975

10. Economic Indicators, Vol. 11, No. 3
    March 1975, Federal Office of Statistics

11. Nigerian Acreage and Production of Major Crops, 1972
    Statistical series, FDA/PL/D6
    Agric. Planning Div., FDA

12. Charts Compiled by Meteorological Service
Nigeria in 1967 – 69 (period of 10 years from 1953 till 1962)

1) Mean Annual Temperature
2) Mean Annual Maximum Temperature
3) Mean Daily Temperature
4) Mean Daily Minimum Temperature
5) Mean Daily Relative Humidity, 10:00
6) Mean Daily Relative Humidity, 16:00
7) Mean Monthly Rainfall
8) Mean Annual Rainfall
9) Mean Number of Rainy Days for Twelve Months
10) Map of Lagos
11) Road Map of Nigeria, 1/2,000,000 by Nigerian Mapping Co.

13. Political and Economical Conditions in Nigeria
(Itochu Trading Co.) (Mr. Hasegawa, Managing Director)

14. Looking at Nigeria, Colin Latchen

15. World Bank Country Economic Report in Nigeria
Option for Long-Term Development

16. Annual Report, 1974
International Institute of Tropical Agriculture (IITA), Ibadan

17. Annual Report of the Federal Department of Agriculture Research, 1973–4
Published by Federal Department of Agriculture Research
Moor Plantation Ibadan (1975)

18. Factors Involving in the Parboiling and Milling of Parboiled Rice
Department Memorandum No. 66 (FDA, Ibadan)

19. Some Data in Support of Current Recommendations on Rice Varieties
for Northern Nigeria
Memorandum No. 65 in Feb. 1974, FDARMP, Ibadan

20. Application of Farmer's Plot
Technique to Rice Experimentation in Northern Nigeria
Memorandum No. 69 in April 1964, FDARMP, Ibadan

21. A List of Varieties of Rice Maintained at Federal Rice Research Stations in 1965
Memorandum No. 81 in October 1965, FDARMP, Ibadan

22. Rice Pests and Their Known Parasites and Predators from Nigeria
Memorandum No. 86 in December 1965, FDARMP, Ibadan

23. Nitrogen Fertilization for Flooded Rice
Comparison of Methods of Placement and Time of Application
July 26 – 29, 1971, by K.A. Ayotade, Soil Chemist
Federal Rice Research Station, FDAR, Badeggi

24. Plant Population Experiments, with Transplant Swamp Rice in Nigeria
1965, by TH. J. Bredero, Federal Rice Research Station, Badeggi

25. Past Articles & News Summaries
Published by Centre for Overseas Pest Research, College House

26. A Type of Stable Resistance to Blast Disease of Rice
S.H. Ou, F.I. Nugue, T.T. Ebron and V.A. Awoderu

27. Planning Report on Agric. Dev. for Do-Anambra Rivers Area
Nipon Koei Co., Ltd., Tokyo, Oct. 1974

28. A Quantitative Analysis of Food Requirements, Supplies and Demand in Nigeria, 1968 – 1985
Published by FDA, Lagos, Nigeria

29. Agric. Dev. in Nigeria, 1965 – 1980, FAO

30. Soil Survey Memoir, No. 1, Anambra-Do River's Area
Department of Technical Co-operation, U.K.

31. Rice -- NAFPP Fertilizer Minirit Trial in 1976 Record Book
National Cereals Research Institute, Ibadan

32. List of Recommended Rice Varieties
Federal Department of Agric. Research, Moor Plantation, Ibadan, May 1975

33. All Professional Field and Technical Staff
National Cereals Research Institute, Rice Research Station, Badeggi, May 1976

34. Achievement of Ministry of Agric. and N/R 1968 – 74
Information Bulletin No. 2, June 1974, by Kwara State of Nigeria

35. Ministry of Agric. and Natural Resources
Information Bulletin No. 1, December 1972, by Kwara State of Nigeria

36. A Quantitative Analysis of Food Requirements, Supplies and Demand in Nigeria, 1968 – 1985
by FAO, (November 1972)

37. Agriculture in Nigeria
by FAO, 1967

38. Rice -- NAFPP Variety Miniket Trial 1976 Record Book
by NAFPP

39. The Rice Programme of National Rice, Maize Centre
by NAFPP in January, 1976

40. Potential of Hydromorphic Rice Cultivation in Nigeria
by NAFPP in January, 1976

41. Nigeria Year Book, 1975
A Daily Times Publication

II. SUMMARY OF FINDINGS

1.1 Agriculture

In recent years, oil production has pursued a sharp upward trend and industrialization has been in rapid progress in Nigeria. Nevertheless, the country is still heavily dependent upon agriculture as evidenced by the high ratio of agricultural production to the gross national product and the large agricultural population. The agricultural production accounted for 64.3% of gross national product in 1961/62, 58.9% in 1964/65 and about 49% in 1970/71, and FAO data indicates that the country has an agricultural population of about 47,800 thousand of about 66.4% of the total population (72,000 thousand). Main crops are divided into commercial crops for export (cocoa, oil palm, rubber, groundnuts and cotton) and food crops for domestic consumption (sorghum, millet, maize, rice, groundnuts, cowpeas, soybeans, yams, cassava and coco-yam). Most farmers are small holders with their operational holding averaging 1 ~ 3 ha. with the exception of a few plantations, extensive shifting culture resorting to simple farming implements and manual labour prevails in the greater part of the farmland area.

Until the phenomenal increase of oil production, agricultural products accounted for more than 70% of the country's total export value and the national budget was supported by the export profit gained by the monopolishtic purchase of all export crops by the government. Under the agricultural policy enforced in those days, therefore, researches, experiments and guidance in production techniques were conducted only for commercial crops for export, and not much attention was paid to food crops for domestic consumption.

In recent years, oil production has increased sharply to cover more than 90% of hte total export value, while the share of agricultural products has declined to as low as 9% (1973). The country's population, on the other hand, has been growing at an annual rate of about 2.5% accompanied by the progress of urbanization and improvement of the people's dietary life, which has given rise to the increase domestic demand for cereals, vegetables, fruits and livestock products.

According to the Food Demand and Supply Prospect for 1975 and 1980 which was prepared by the Committee for Food Requirements, Supplies and Demand in Nigeria by taking 1968/69 as basic year and submitted to the government, shortage is expected in the supply of sorghum, millet, maize, yams, palm oil, banana, cowpeas, soybeans and benni seeds. The only crops whose production is likely to exceed the demand are rice, cassava and cocoyams.

In view of this projected food situation, the government has shifted the focus point of its agricultural policy to the production increase of food crops, while making continued effort for the promotion of export crops. However, cognizant of the difficulty in attaining any rapid production increase by the traditional cultural practices, the government has incorporated

in the Third Five-Year National Development Programme an agricultural development plan which is aimed at improvements in many different aspects. Improvements envisaged by the plan include the breeding and extension of improved varieties, establishment and diffusion of the intensive farming method, land improvement, expansion of farmland area, construction of irrigation facilities, creation and operation of large-scale mechanized model farms, import promotion of fertilizers, agricultural chemicals and farm machinery and provision of incentive subsidies, establishment of the storage and processing system, improvement of the road network, establishment of the agricultural extension system, fostering of agricultural cooperative societies, and establishment of a food production public corporation in each state.

The plan, however, presents no clear prospect of success and is expected to encounter many difficulties in the course of its implementation. To cite an example of impending difficulties, the planted area and production of rice have been on the 500 ~ 600 thousand ha mark and the about 300 thousand ton mark respectively since 1970, although they are estimated at about 465 thousand ha and about 670 thousand tons respectively in the projected food supply and demand introduced above.

Compared with other cereals, rice is more costly but it is heavily demanded in urban areas, so that about 4,800 tons of rice was imported in 1974 and about 8,000 tons in 1975. For this reason, the government mapped out an emergency food production increase plan under which at least one model farm of 2,000 ~ 4,000 ha. was established in each state to accelerate the rice production. Prior to the present preliminary survey, the mission was strongly requested by the Nigerian government to select suitable rice cultivation areas from the six main rice producing states in the Niger river basin.

The food production increase plan was worked out primarily to augment the production of those crops which are planted in an extensive area, such as cereals like sorghum, millet and maize, or tuber and root crops like yams and cassava. Nevertheless, the plan is expected to augment the yield of rice from the present average level of 1.2 t/ha. to about 4 t/ha. if the intensive farming is introduced. The Nigerian government entertains a great hope for accelerated production of rice as it can be grown in flat flood peripheries of large rivers where no other crops can be cultivated, and is expecting that technical cooperation in this rice production increase plan will be offered by Japan and China.

If a suitable improved variety is planted with irrigation facilities well consolidated, it is possible to attain a yield of about 4 tons per ha. by single cropping and about 8 tons per ha. if double cropping is introduced. Heavy manuring culture of rice is prone to give rise to frequent occurrence of diseases and insect pests or to bird and rodent injuries of which the control method is not established yet. From the point of view of technical cooperation, however, heavy manuring culture of rice in Nigeria deserves attention, although its validity may be impaired by the difficulty in obtaining suitable agricultural chemicals.

For reasons described above, the mission heartily wishes that the rice production

increase plan will be successfully put in operation.

1.2 Agricultural Economy

Since its colonial days, Nigerian agriculture has been operated with stress placed on the production of export crops so that the infrastructural improvement for food crop production is delayed. Agricultural productivity is very low on account of the extensive farm management and most farmers are operating on the subsistent level. In the food production increase plan incorporated in the Third Five-Year Nationl Development Programme, therefore, prime consideration is given to the establishment of a stabilized domestic food supply system in order to fill the growing demand for rice and wheat ensued from the improvement of the people's income level and rapid growth of ruban population. It is expected that if the plan is implemented for consolidation of the production infrastructure by taking advantage of the rich land resources and abundant oil returns, it will not only fill the domestic food demand but also promise higher living standards for rural inhabitants who are said to account for 80% of the total population. If the plan is put in action successfully, it will also serve to prevent the outflow of agricultural population to urban areas.

Rice is not yet a staple food in Nigeria because its annual consumption is no larger than about 200 thousand tons or 3 kg per capita. at present. According to the guideline of the Federal Government, however, the annual growth rate of rice consumption during the 1973 ~ 1980 period is estimated at 10.4%, so that it is probable that the demand for rice will grow sharply in the coming years.

In promoting the rice production, the following points must be taken into account.

1) An integrated technical guidance system covering the whole process from planning to the extension of advanced farm management should be established to encourage transfer from the traditional extensive shifting cultivation to the intesnsive modern agriculture.

2) The distribution mechanism and storage facilities of products and production equipment and materials should be consolidated in order to ensure smooth and stable supply of foods.

3) Suitable subsidiary measures should be taken to mitigate the heavy burden which would be imposed on farmers for improvement and reclamation of paddy fields and for introduction of modern farm machinery and equipment.

4) Due consideration should be given to the conditions of surrounding farmers in creating pilot farms so that they will be managed in a manner conducive to the future extension of advanced techniques in the neighbouring areas.

5) It appears that the current market price of rice is considerably higher than the international level or the domestic market price of other food crops. In planning the management of pilot farms, therefore, long-range prospects for rice price should be taken into consideration.

1.3 Irrigation

According to the Third Five-Year Development Programme, the irrigated farmland area in Nigera covers an acreage of 20,000 ha. in total. The preliminary survey disclosed that the greater part of this area is covered by large plantations operated by the State, corporations or public corporations, and there are no instances where irrigated agriculture is conducted by individual farmers.

In the Five-Year Programme, it is repeatedly stated that irrigated farming is an essential prerequisite to the expansion of rice planted area and stabilized increase of production. The planned agricultural development can be implemented either by promoting the currently practiced large estate system or by extending irrigated agriculture among general farmers. To comply with the request of the Nigerian government, however, it is planned that irrigated farming will be extended by creating a farm operated by the government with an acreage of 2,000 ~ 4,000 ha. in each area.

Rice field development calls for many prior surveys. In the field of agricultural civil engineering, soil and discharge surveys should be given particular importance. Creation of new rice fields should be preceded by the construction of a pilot farm which is to be carried out with careful consideration given not only to the irrigation engineering aspect but also to all related factors such as type of cultivation, plant protection, economic effect, labour management, etc. It is advisable that new rice fields be developed according to the annual reclamation plan after the pilot farm is constructed and put in smooth operation.

1.4 Technical Cooperation

The Nigerian government has sufficient development funds and is hoping strongly to receive only technical cooperation from the Japanese government.

The Japanese government will therefore provide technical cooperation especially in the rice production increase plan. (emergency food production plan) which constitutes part of the food production increase plan incorporated in the Third Five-Year National Development Programme.

The Japanese governmental technical cooperation includes the preliminary survey conducted in May 1976 and a detailed survey for formulating the project implementation programme, and the subsequent cooperation will be offered on the non-governmental basis.

For the purpose of mapping out the implementation programme, it is proposed that a feasibility study be conducted by a mission consisting of 8 ~ 10 members for a period of about two months in the two selected areas after the wet season is over (i.e., after October 1976).

Two suitable rice cultivation areas were selected tentatively during the preliminary survey. Final selection of the project areas will be made after consultation between the Federal Government and respective State Governments.

For the successful implementation of the feasibility survey, the Nigerian government will be required to make budgetary appropriations necessary to provide the services of several counterparts, 4 ~ 5 motorcars with drivers and fuel, accommodations, and other facilities and conveniences.

The staying expenses of Japanese experts in Nigeria will be borne by the Japanese government.

III. DETAILED DESCRIPTION

1. Existing Conditions in Nigeria

1.1 General

1.1.1 Natural Condition

Lying between lat. 4°20' and 14°00' N. and between long. 2°40' and 14°30' E., Nigeria is a rectangular land covering a distance of about 700 km from south to north and about 900 km from east to west. It faces Guinea Bay on the south, and adjoins Dahomey on the west, Niger on the north, and Tchad and Cameroon on the east.

Its territory totals 923,416 km^2 or about two and a half times that of Japan. The entire land is within the tropical zone where rainfall distributes itself into two seasons, the wet and the dry. The wet season lasts while the hot and damp air mass keeps on crawling up northwards from Guinea Bay, and the dry season runs during the southward movement of the hot and dry air mass from Sahara.

However, since the country extends over 10° from south to north, it is divided into four zones by rainfall which decreases from south to north. The southernmost zone, which has a width of 20 ~ 90 km, is a coastal swamp area where mangrove thrives. To the north of this zone lie the undulating tropical rain forest zone having a width of 80 ~ 160 km and an elevation of less than 300 m, and the sparse forest and plain zone having a width of 500 km. The northernmost zone is a vast plateau with mild undulation which adjoins Sahara.

The southern tropical rain forest zone has an annual mean rainfall of 2,000 ~ 5,000 mm, the greater part of which is recorded concentrically from early April to late October. The relative humidity in this zone is high and ranges from 75 to 98%. The dry season lasts from November to March. During the December to January period, the sand-laden hot wind called the harmattan blows from Sahara.

In the northern zones, the dry season lasts longer. From mid-August to early June, there is virtually no rainfall, the temperature ranges from 14 to 41°C, and the humidity occasionally drops below 10%. During the wet season, however, the northern zones present no particular differences with the southern tropical rain forest zone.

1.1.2 Political and Socio-economic Conditions

Nigeria, once known for Slave Coast and as the white men's graveyard, is now one of the largest African countries stretching from Sahara to as far as Guinea Bay and enjoying the seventh largest oil production in the world. The country is now called the leader of economic

development in Africa.

The country gained independence in October 1960 as Federal Republic of Nigeria after 100 years of British rule, and adopted the republic form of government with President as the chief of the state. However, this was followed by two coups d'etat which broke out in January and July 1966 respectively. In May 1967 when the domestic conflict incidental to a multi-tribal nation raged, the Federal Military Government determined to unite the twelve states into a federation. This caused the former Eastern state to declare independence and call itself Republic of Biafra. Internal disturbances continued in the country until this rebellion was suppressed in January 1970.

On the occasion of the tenth anniversary of independence celebrated in October 1970, National Sovereign Gowon announced the Second Five-Year National Development Programme (1970 ~ 1974) which was mapped out to rehabilitate Nigeria's economy after the civil war on the basis of petroleum development. Nigeria abounds in oil and hydropower. In particular, production of crude oil (high quality oil with low sulfur content) has been on the sharp increase in the deltaic area of the Niger river and its offing. The daily production of 1,060 thousand barrels in 1970 increased to 1,900 thousand barrels in 1975.

National Sovereign Mohammed who braced up the former political system by the October 1975 Revolution was killed by the malcontent military elements in January 1976. His post was succeeded to by General Obasanjo who followed the former administrative policy and won the people's support.

The 1973 census disclosed that Nigeria has a population of 79,770 thousand which, however, is said to be in the neighbourhood of about 70,000 thousand in actuality. Nevertheless, this is larger than any country in Africa. The population density averages 70 ~ 80 persons per square kilometer. Nigeria consists of some 248 tribes, of which the major ones are the Hausa and the Fulani in the north (approx. 15,000 thousand), the Yoruba in the southwest (approx. 14,000 thousand) and the Ibo in the southeast (approx. 9,000 thousand).

Lagos, the capital of the Federal Republic, is the political and economic centre and one of the two main sea ports in the country, and has a population of about one million. Other main cities are Ibadan, the capital of Oyo state, the largest negro city in the world having a population of one and a half million (Ibadan university and International Institute for Tropical Agriculture are found in this city), Port Harcourt, another main sea port of Nigeria and the terminal of the oil pipe network, and Kaduna, Kano, and Enugu.

Before the oil mining, refinery and export were set afoot more than 90% of Nigeria's export value was accounted for by agricultural products. At present, however, agricultural products account for less than 10% of the total export value. Main agricultural products are classified into commercial crops such as cocoa, palm oil, palm kernel, groundnuts, rubber and cotton and food crops for domestic supply such as yams, cassava, rice and maize. Production of rice is planned to be increased by the government, but the present yield is on an extremely low level as will be described later.

1.1.3 Organization of Federal Ministry of Agriculture and Natural Resources

Federal Ministry of Agriculture and Natural Resources

- o Headquarters and Administration
- o Department of Agriculture/Rural Development
- o Department of Forestry
- o Federal Fisheries Service
- o Department of Veterinary Research
- o Department of Forest Research
- o Cocoa Research Institute of Nigeria
- o Nigerian Institute for Oil Palm Research
- o Nigerian Institute for Trypanosomiasis Research
- o Nigerian Meteorological Service

    - – Crop Protection Branch
    - – Crop Nutrition Branch
    - – Crop Production Branch

1.2 Existing Condition of Agriculture

1.2.1 Agriculture in General

According to the FAO statistics in 1972, Nigeria's farmland area covers 21,790 thousand ha or about 24% of her total land area. In the report 'Agriculture in Nigeria' made by V.A. Oyenuga, FAO, in 1967, however, the sum total of farmland area and planted area of perennial crops is 8,100 thousand ha. This value is considered to exclude the fallowed land from the shifting culture area. The total farmland area in the country (including the fallowed land and planted area of perennial crops) is considered to range from 22,000 to 32,000 thousand ha and the land utilization rate from 24 to 35% (Data are derived from International Development Centre, Japan).

(1) Perennial Crops

Table 4. Planted Area and Production

	Estimated Planted Area	Production (1,000 ton)				
		1960/61	62/63	64/65	66/67	69/70
Cocoa	600,000 ha	189	197	223	188	189
Palm Oil	1,200,000					
Palm Kernel		428	417	441	465	405
Palm Oil		669	641	678	715	623
Rubber	500,000	58	66	71	50	68
Banana	(Unknown)	810	820	855	900	970
Kola Nuts	(Unknown)	132	142	159	158	171
Coconuts	(Unknown)	69	72	104	90	83

Source: National Agricultural Development Committee

Export crops such as cocoa, oil palm and rubber are grown in the southern tropical rain forest area. Nigeria is the second largest cocoa producing country after Ghana. 90% of cocoa planted area is in Ex-Western state, and the total cocoa production is about 20,000 thousand tons. Most cocoa producers have an operational holding of about 2 ha. Cocoa Research Institute of Nigeria near Ibadan is engaged in various research activities for breeding, control of diseases and insect pests, and management improvement.

The oil palm planted area is estimated at 1,200 thousand ha. However, natural and semi-natural oil palm trees covers a substantially large part of the production, and intensive oil palm culture is observed in few cases. Replanting required to repair the damage of Biafra Civil War has not been advanced so that many oil palm gardens are superannuated. Nevertheless, efforts have been made for planting improved varieties. The production of palm kernel is about 400 thousand tons and that of palm oil about 600 thousand tons.

Rubber production is relatively large, and replanting and new planting are planned to remedy the damage of the civil war. Most plantations are small and range from 0.5 to 0.7 ha, although there are some large-scale plantations. The total planted area is estimated to be about 400 to 500 thousand ha, and the production ranged from 50 to 80 thousand tons.

(2) Annual Crops

Planted area and production of annual crops are given in the statistics published in 1972 by the Planning Division of Federal Department of Agriculture. However, the statistics are not considered accurate because of the prevalence of mixed cropping. Sorghum is planted in the largest area, and it is grown with millet in the northern Sabannah area where the rainfall is rather small. Sorghum is usually cropped with cow-peas and groundnuts. Its planted area is about 14,000 ha and its production is about 4,000 thousand tons. Unit yield is said to be 0.6 ~ 0.7 ton per ha. However, an improved variety grown experimentally with fertilizers recorded a yield of about 2 tons per ha, and F_1 seed trial cultivation at an experimental station registered a yield of about 4 tons per ha.

Table 5. Planted Area and Production of Major Annual Crops

Unit: 1,000 ha, 1,000 t

	1965/66		1969/70		1971/72	
	Area	Production	Area	Production	Area	Production
Millet	11,428	2,686	12,114	3,002	6,518	1,943
Sorghum	14,660	4,168	14,023	4,029	7,636	1,450
Peanuts	5,509	1,363	4,529	1,272	2,614	537
Beans	6,779	636	9,950	871	5,717	414
Yams	4,059	14,540	3,673	13,620	1,812	5,742
Cotton	1,143	342	1,763	465	639	72
Maize	3,466	1,142	3,731	1,374	1,935	560
Cassava	745	2,929	1,313	5,514	941	2,903
Rice	468	228	577	278	52	7
Coco Yam	698	1,581	824	1,992	378	194
Melon	785	125	1,356	72	9	1
Benneseed	265	31	160	20	594	57
Soya beans	168	21	55	19	483	1,442

Source: 1. Federal Department of Agriculture, Lagos
2. Federal Office of Statistics, Lagos

Millet is planted in an area of about 1,200 thousand ha, and its production ranged from 2,700 to 3,000 thousand tons. Unit yield attainable by single cropping is about 0.7 ton per ha.

Peanuts are grown mostly in the northern Savannah area. Its planted area is 4,500 thousand ha. The greater part of its production, about 1,300 thousand tons, is exported. Both the planted area and the production have declined recently in northern states on account of drought damage.

Cowpeas are grown widely in northern states like peanuts in an estimated area of 6,000 ~ 10,000 thousand ha. The production ranges from 600 to 900 thousand tons.

Cotton is also grown widely in the northern states in an area of 1,000 ~ 1,500 thousand ha, and its production ranges from 350 to 450 thousand tons, of which the greater part is exported.

Maize, cultivated throughout the country, is planted in an estimated area of 3,000 ~ 4,500 thousand ha. In many cases, it is grown by mixed cropping with yams and peanuts. It is harvested twice a year, but the wet season cropping in which seeding is done at the beginning of the wet season for harvesting in July to August accounts for the great majority of production. It is used mostly food without processing.

Yams are also grown throughout the country, but the central and southern regions where rainfall is copious are the main producing areas. The seedlings are planted in mounds measuring 60 ~ 70 cm in diameter and 50 cm in height and supported by posts. Because of this relatively intensive culture, the yield ranges from 8 to 10 tons per ha. The planted area is 3,000 ~ 4,000 thousand ha, and the production is said to range from 80,000 ~ 10,000 thousand tons. Yams are used for food without processing which is rather difficult.

Cassava is planted in an area of more than 1,000 thousand ha through the country, and the greater part of its production, 3,000 ~ 5,000 thousand tons, is used for food after drying and processing.

Rice is cultivated in an area of 500 ~ 600 thousand ha and its production is 200 ~ 300 thousand tons. The main producing areas are the alluvial plains in the Niger and Benue basins. The former Benue plateau and the former Western state are the most well-known rice producing areas. Upland rice is grown in many parts of the country, but its yield is low because of the prevalence of extensive farming resorting to direct sowing. Unit yield is recorded 1.4 ton per ha in 1971/72, 1.9 ton per ha in 1972/73, and 1.3 ton per ha in 1973/74. However, a yield of 4 tons per ha was registered in the experimental farm operated in Anambra State and in the transplanting culture conducted in F.P.C. farm (45 AC) in Pere Mabiri, Rivers State.

Table 6. Rice Planted Area by State (1,000 ha)

State	1968	1969	1970	1971	1972
Western	95.2	36.8	67.6	68.4	69.1
Lagos	–	–	–	–	–
Mid-Western	3.6	8.8	10.0	10.2	10.4
Kwara	4.0	3.2	2.4	2.4	2.5
Benue-Plateau	37.6	56.4	76.0	76.8	77.6
Kano	1.6	3.6	9.2	9.4	9.6
North-Eastern	24.8	28.0	28.0	28.3	28.6
North-Central	3.2	11.6	10.4	10.6	11.0

State	1968	1969	1970	1971	1972
North-Western	25.6	34.4	29.2	29.5	29.8
South-Eastern	–	–	0.4	0.4	0.4
Rivers					
East-Central					

Notes: Figures for 1971 and 1972 are estimated value.

Source: Federal Department of Agriculture

(3) Rice Cultivation System in Nigeria

(i) Floating Rice

Floating rice is cultivated in inundated area with a water depth of up to 2 m in the northern states such as Sokoto and Bendel. The conventional Oryza graverima species are being replaced by the newly bred varieties such as FARO-6 and -14.

(ii) Deep Swamp Rice

Deep swamp rice is grown in the Neger river basin where the maximum water depth during the growth period reaches 1 - 2 m. Introduction of improved varieties such as FARO-4 is prompted.

(iii) Shallow Swamp Rice

Shallow swamp rice is the ordinary paddy rice which is grown in the wet season. Varieties having a growth period of 130 ~ 150 days to 150 ~ 180 days are cultivated.

(iv) Mangrove Swamp Rice

Mangrove swamp rice is grown in the low-lying high-acidity swamps near the estuary of the Niger river, Rivers State. It can withstand a water depth of 60 ~ 80 cm.

(v) Upland Rice

Upland rice is grown mostly by mixed cropping with maize and other crops in Ex-Mid Western and Western states where the rainfall is relatively copious. Farm management improvement for upland rice is studied at the large-scale mechanized farm operated by the government. Under the rice production increase plan, seed farms owned by the state are operated for free distribution of seeds or for leasing of seeds in the sowing season to be recovered two fold after harvesting. Fertilizers are supplied to farmers with 75% of the cost borne by the government. Further, Food Production Corporations are planned to be established in respective states to provide the farmers with guidance in the rice production, storage and marketing.

1.2.2 Agricultural Economy

Nigeria started its Third Five-Year National Development Programme (1975 ~ 1980). The total fund required for the implementation of the programme amounts to ₦30 billion which is planned to covered by the Federal and state governments (₦20 billion) and private investment (₦10 billion).

The gross national product in 1974 was ₦14 billion. Under the programme, this is planned to be increased at an annual rate of 9.1%. Of the total disbursement for the Third Five-Year Development Programme, ₦2,200 million is planned to be appropriated for agricultural development (₦1,700 million for agricultural crops, ₦300 million for livestock farming, and ₦200 million for forestry and fisheries). In order to augment agricultural and livestock production, it is planned to expand and consolidate farmland, construct and improve roads, increase the supply of fertilizers, and consolidate the distribution mechanism.

At present, Nigeria has a population of about 70 million, of which 80% is accounted for by rural population. Agricultural population accounts for 70% of the total working population. The annual rate of population increase is said to be 2.5 ~ 3.0%. With the full-scale oil pro production which started in the latter half of the 1950's and the consequent progress of industrialization, there has arisen sharp population outflow from rural to urban areas, presenting many social problems. It is expected, however, that the emergency food production policy will be successfully put in force by taking advantage of the abundant land resources and rural labour force and the rich oil returns.

Agricultural products are divided into export crops (palm oil, palm kernel, peanuts, cocoa and cotton) and food crops for domestic consumption (yams, cassava, sorghum, millet, banana and maize). Until the oil production was set on the track in 1958, agricultural products accounted for the greater part of the export value, but gave place to oil in 1965. In 1974, oil amounted to ₦5,300 million or 93.1% of the total export value of ₦5,700 million.

Table 7. Export of Main Items (1970 ~ 1974)

	Volume					Amount (Thousand Naira)				
	1970	1971	1972	1973	1974	1970	1971	1972	1973	1974
Cocoa (thousand t)	196	271	228	211	180	133,074	143,114	101,134	112,364	158,970
Peanuts "	291	136	106	199	30	43,458	25,020	19,134	45,505	6,828
Oil "	51,697	71,699	85,860	94,302	96,227	509,790	953,032	1,156,960	1,893,483	5,287,030
Cotton "	28	22	1	8	-	13,132	11,094	606	4,705	-
Palm Kernel "	185	241	212	137	185	21,740	25,916	15,668	18,864	43,722
Palm Oil "	8	20	2	-	-	1,134	3,388	246	-	-
Rubber	59	51	41	49	59	17,568	12,402	7,350	19,394	37,525
Tin ore (ton)	3	-	-	-	1	4	-	-	-	1
Tin "	10,903	8,433	6,848	5,251	5,681	33,202	24,812	19,124	15,018	26,123
Columbite "	1,752	1,218	1,486	1,143	2,277	1,950	1,166	1,074	1,399	1,375

	Volume					Value (Thousand Naira)				
	1970	1971	1972	1973	1974	1970	1971	1972	1973	1974
Lumber (m^3)	219	204	211	370	899	6,206	5,288	6,330	11,775	11,185
Total						781,258	1,204,512	1,327,626	2,122,507	5,572,759
Ratio to Total Export Value						89.1	94.0	94.7	93.5	97.5

Source: Federal Office of Statistics, Lagos

The main foodcrops consumed in Nigeria are the tuber-root crops such as yams and cassava, and maize. In the bottom of the harvest, their absolute volume of supply falls short of demand, and the resultant price escalation causes instability of the people's livelihood. Further, on account of the increase of urban population and the improvement of the people's income level, tuber-root crops are gradually giving place to rice and wheat, the shortage of which is covered by import.

Food production has been increasing at an annual rate of about 2.5% which is about equivalent to the annual rate of population increase recorded since 1968, but this has not satisfied the growing food demand. Food production increase attempted under the First Five-Year Plan (1962 ~ 1968) and the Second Five-Year Plan (1970 ~ 1974) has not yielded sufficient results. The emergency Food Production Increase Plan was therefore incorporated in the Third Five-Year Plan (1975 ~ 1980). The Federal Military Government is planning to attain the planned food increase by October 1979 when is expected to be replaced by a civil government.

As seen in Table 8, most farmers have an operational holding of less than 1 acre. Because of the prevalence of extensive farming by shifting culture and virtual lack of soil infrastructure improvement, the agricultural productivity is extremely low and most farmers are operating on a subsistent level.

In 1970, the national income per capita was US$76.00, but the income of farmers was less than half which earned by those engaged in non-agricultural sectors. It is considered that the gap has been widened in recent years. (The minimum wage level in Anambra state is ¥1.75 and this is subject to some fluctuation by state.)

Distribution of export crops such as cocoa, peanuts, cotton and palm oil is monopolized by Marketing Board, an official marketing agency, which collects these crops through agents at about half the international market price for collection of sales and export taxes. Until oil production was set afoot, therefore, the export crops were the most important source of the government revenue which, however, was not returned to the agricultural sector. This is one of the delayed development of Nigerian agriculture. There is no large distribution system established for food crops for domestic consumption. Although there are many small-scale brokers dealing with these crops, they lack sufficient fund and have no storage facilities, so that the supply to consummers is made inevitably unstabilized. Rice is purchased in paddy from farmers by small-

Table 8. Management Scale by Operational Holding

	Ordinary Farmland + Households						Ordinary Farmland						Tree-Crop Site					
	Percentage of Farm Households			Percentage of Acreage			Percentage of Farm Households			Percentage of Acreage			Percentage of Farm Households			Percentage of Acreage		
	'68/'69	'69/'70	'70/'71	'68/'69	'69/'70	'70/'71	'68/'69	'69/'70	'70/'71	'68/'69	'69/'70	'70/'71	'68/'69	'69/'70	'70/'71	'68/'69	'69/'70	'70/'71
Less than 0.25 acre	20	18	33	3	1	8	16	8	32	1	0	4	6	4	16	1	0	1
0.25 ~ 0.49	23	17	30	7	7	18	12	7	19	3	1	7	13	13	14	3	3	3
0.50 ~ 0.99	28	27	20	20	17	29	23	14	20	8	4	15	23	14	25	9	5	15
1.00 ~ 2.49	20	27	16	26	33	36	33	29	20	27	17	30	36	37	31	31	29	36
2.50 ~ 4.99	7	10	1	34	31	9	12	26	7	26	32	27	16	22	10	30	31	23
5.00 ~ 9.99	2	1	–	10	10	–	4	12	2	25	29	14	6	8	3	19	21	14
10.00 ~ 14.99	–	0	–	–	1	–	0	3	0	6	10	3	0	1	1	2	8	8
15.00 ~ 19.99	–	–	–	–	–	–	0	1	–	2	4	–	0	1	–	5	3	–
More than 10.00	–	–	–	–	–	–	0	0	–	2	3	–	–	–	–	–	–	–
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Federal Office Statistics, Lagos.