OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

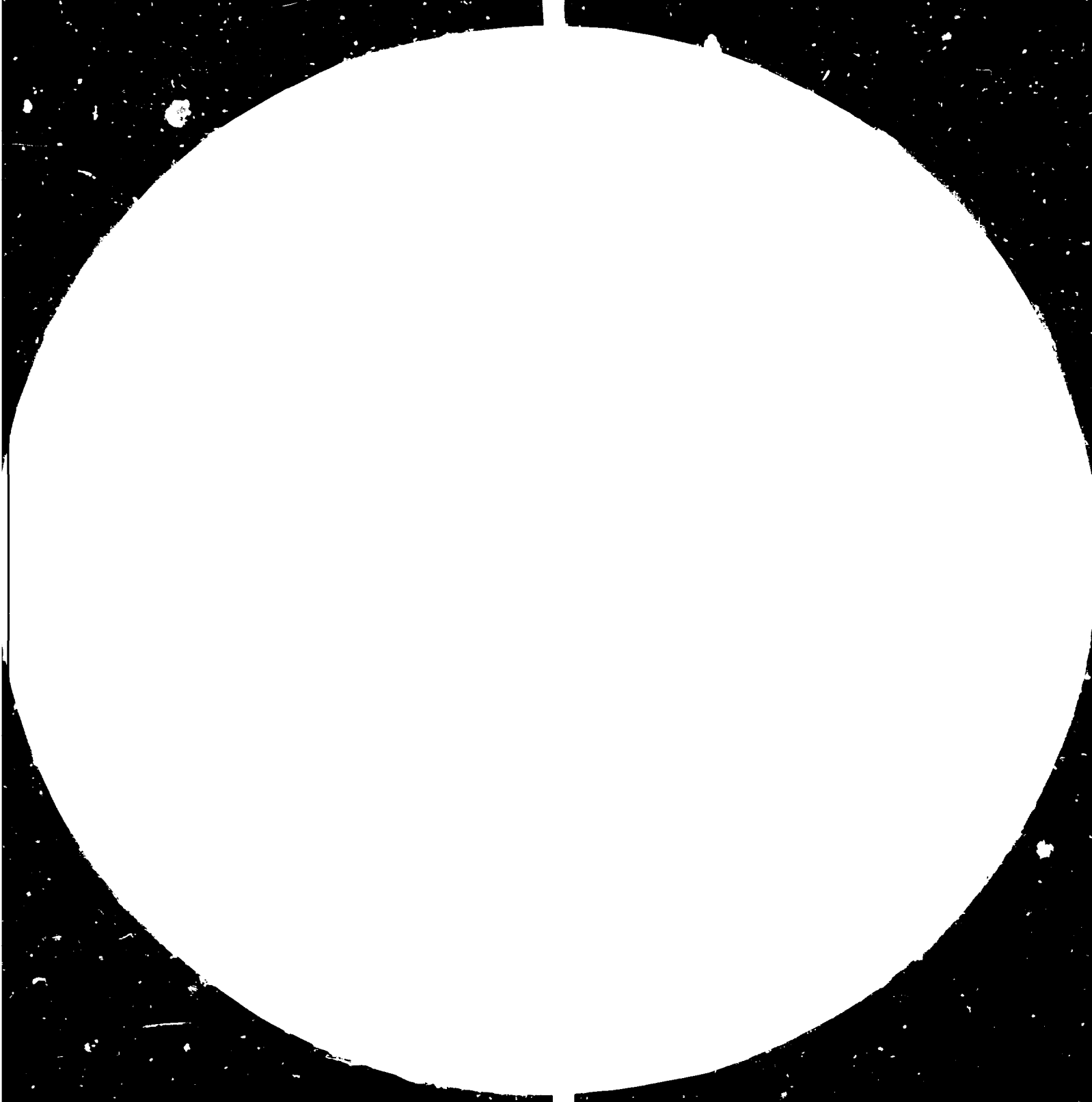
FAIR USE POLICY

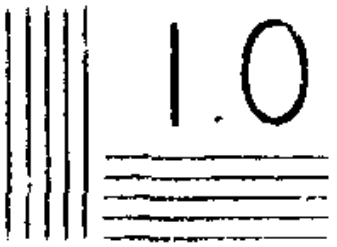
CONTACT

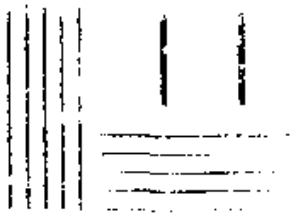
Please contact publications@unido.org for further information concerning UNIDO publications.

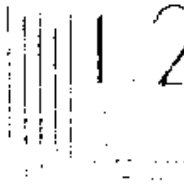
For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org




1.0


1 1


1.25

12464

RESTRICTED

DP/ID/SER.A/[illegible]
16 April 19[illegible]
English

STRENGTHENING OF THE CHEMICAL
RESEARCH INSTITUTE, BOGOR

[illegible]

INDONESIA

Terminal report*

Prepared for the Government of Indonesia
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of M. Latif [illegible],
Project Manager

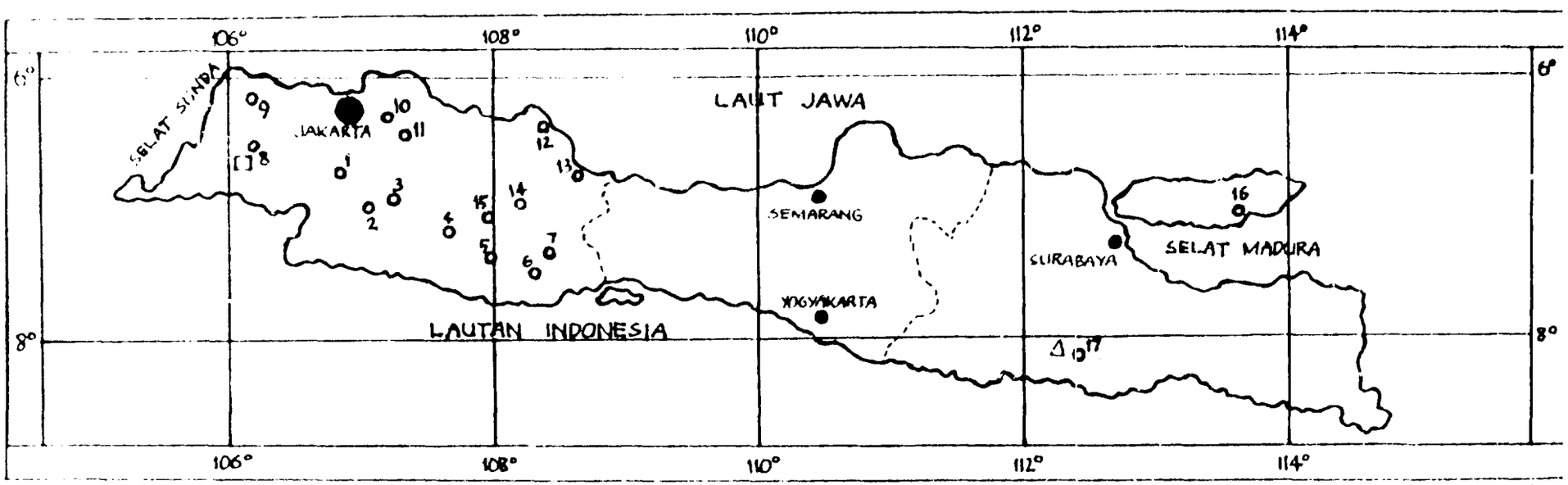
United Nations Industrial Development Organization
Vienna

* This document has been reproduced without formal editing.

JAVA AND MADURA

Frontispiece

REGIONS SURVEYED AND HEADQUARTERS OF OUT-POSTED TEAMS



WEST JAVA

1. Bogor
2. Sukabumi
3. Cianjur
4. Bandung
5. Garut
6. Tasikmalaya
7. Ciamis
8. Banjaran
9. Serang
10. Bekasi
11. Karawang
12. Indramayu
13. Cirebon
14. Majalengka
15. Sumedang

EAST JAVA

16. Sumenep
17. Blitar

o Regions where Surveys of Small-Scale Food Industry conducted

Δ Headquarter of Out-posted Team I, Blitar

[ ] Headquarter of Out-posted Team II, Banjaran

TABLE OF CONTENTS

Page

Page

LIST OF FIGURES

PREFACE

The United Nations Industrial Development Organization is greatly indebted to all those organizations and individuals who assisted in the emplementation of the project by providing information, advice and facilities.

LIST OF ABBREVIATIONS AND ACRONYMS

BIPIK	Bimbingan dan Penyuluhan Industri Kecil (Guidance and Development of Small Industry)
CRI	Chemical Research Institute
IRDABI	Institute of Research and Development for Agro-Based Industries
KANDEP PERIND. D.T.II	Kantor Departemen Perindustrian Daerah Tingkat II (District Industry Office)
KANWIL PERIND.	Kantor Wilayah Perindustrian (Provincial Industry Office)
LIK	Lingkungan Industri Kecil (Working Centre for Small Industry)
PIK	Perkampungan Industri Kecil (Working-cum-Residential Centre for Small Industry)
PUSKOPTI	Pusat Koperasi Produsen Tempe dan Tahu Indonesia (Central Co-operative of Indonesian Tempe and Tahu Producers)
Rp.	Rupiah (Indonesia)
$	Dollar (United States of America)
TPL	Tenaga Penyuluh Lapangan (Extension Service Official)
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization

CONVERSION FACTOR

US$ 1 = Indonesian Rupiah 675.5

as of 01 October 1982

WEIGHTS AND MEASURES

Metric systems of weights and measures are used in Indonesia

SUMMARY

The small-scale food industries lack technical know-how, and follow only traditional methods. The products, thus, they manufacture are generally of low quality and have poor shelf-life.

The Government of Indonesia wished to provide technological support to the small-scale food industry to a) up-grade the quality of their products, b) improve their production methods, and c) help them in their effort of product diversification. The mechanism chosen to achieve these aims was to assist the Chemical Research Institute (CRI) - now named Institute of Research and Development for Agro-Based Industries (IRDABI) of the Ministry of Industry, so that it could up-grade its expertise and facilities and, thus be able to provide the needed technological know-how and encourage the development of the food processing industry.

Under the auspices of the Project, a multipurpose food Processing Laboratory (Figures V to VII), furnished with equipment (Appendix IV) has been established for IRDABI staffmembers to develop new and/or improved food products. Sixteen new and/or improved food products have been developed and introduced to the food industry.

The institutional pairing link-up between IRDABI and the Tropical Products Institute, London (TPI) was strengthened. TPI arranged fellowship training for eight staffmembers of IRDABI, as well as conducted on-the-job training course in instrumental analysis and general food analysis at IRDABI for its staffmembers. Nine staffmembers (Appendix III) received training abroad in food research and management, food processing methods, food analysis and quality control. Several in-house and out-reach courses

(Appendix VII) in principles of food processing, manufacturing of food products, food analysis and quality control were conducted at IRDABI and in the field for the small-scale food industry entrepreneurs and employees, BIPIK extension service officials, school supervisors and IRDABI staff-members.

An effective collaboration established between IRDABI and BIPIK assisted in conducting field surveys (Appendix V - 1, 6 to 8 & 10) in selected regions of west Java and East Java (Frontispiece). The problems faced by the small-scale food industry (Appendix V - 9) were identified, and solutions suggested. On the basis of the information gathered during the field surveys, and research and development work carried out in the Food Processing Laboratory, 31 instruction manuals for different food products (Appendix V - 20 to 50) have been prepared and distributed to the small-scale food industry, BIPIK extension service officials and others.

The objectives of the Project have been achieved. IRDABI now possesses modern facilities to develop new and/or improved food products, and have high-grade expertise to provide extension services and guidance to the small-scale food industry. The research and development as well as the extension service capabilities obtained are being utilized to provide continuous on-the-spot guidance to the small-scale food industry in Blitar/East Java and Pandeglang/west Java regions.

It is now imperative that IRDABI should strengthen the extension service activities to disseminate the results of its research and development activities for utilization and, thus, help in the industrial advancement of the country.

The activities of the out-posted Teams should be expanded to other regions, and should also cover other products.

2. INTRODUCTION

2.1 BACKGROUND

Agriculture is the largest employer and sector of the Indonesian economy. About half of all agricultural workers are employed by agriculture-related industries. Processed-foods-and-beverages industry is an important element in the country's industrial sector. Foods and food products contribute to the general well-being of the people.

The REPELITA III (The Third Five-Year Development Plan), which was launched by the Government in 1979, stipulates that special attention should be given to the promotion of the small-scale industries. The development of the small-scale food industry attains ever more significance as this group is about the second largest 1/ in the small-scale industries sector.

Indonesia also has a large variety of fruits and vegetables, but their processing has still not been or was just superficially explored. The potential of the country for exporting processed foods is considerable.

The majority of the small-scale food industries are family-owned and family-run enterprises. They lack technical know-how, and follow only traditional methods to produce their products. The products, thus, they manufacture are generally of low quality and have poor shelf-life. It is the Government's policy, incorporated in its development plan, that food

---

1/ Government of Indonesia. Surveys of Small-Scale Industry, January - April 1974.

processing as practiced today should be urgently up-graded, and more rational methods of production encouraged.

In order to improve the technological capabilities of the country's small-scale industries and the quality of their products, the Government is planning and already implementing a number of programmes. Through this Project, the Government wished to provide technological support to the food processing industry, particularly the small-scale food industry to

a) up-grade the quality of their products,

b) improve their production methods, and

c) help them in their efforts of product diversification

in consensus with BIPIK (Guidance and Development of Small-Scale Industry).

The Chemical Research Institute in Bogor (CRI) - now named Institute of Research and Development for Agro-Based Industries (IRDABI), of the Ministry of Industry was responsible for providing some technical services to the agriculture-related industries. Its main function was testing of essential oils and product certification. However, it lacked in the capability of food analysis, quality control and new product development. It was decided to assist IRDABI through this Project, so that it could improve its expertise and facilities and be able to provide the needed technological know-how to encourage the development of the food processing industry.

2.2 OFFICIAL ARRANGEMENTS

The Project was initiated sometime in 1975 when a Project Document was drafted on the basis of studies and discussions by United Nations

Industrial Development Organization (UNIDO) personnel. Due, however, to delay in financing, etc., it was decided to expedite implementation by instituting Preparatory Assistance. The Project Document was refined, and some equipment was provided to IRDABI during the Preparatory Assistance phase.

The Government of Indonesia and the United Nations Development Programme (UNDP) signed the Project Document in May 1979, designating UNIDO as the executing agency and the Ministry of Industry (through CRI - now IRDABI) as the Government implementing agency. The Project Document specified a period of three years for the Project. This period was extended by 8.5 months at the Tripartite Review held on 27 November 1981. The Project was started on 16 April 1979 and will be completed on 31 December 1982.

The Project Document provided for $542,136 UNDP contribution (including that provided during the Preparatory Assistance phase) for experts, equipment, fellowship training, etc. This contribution was raised to $692,180 to meet additional costs because of inflation and to cover the expenses for the extension period. The Government agreed to provide Rp.259,291,000 (in kind) comprising of counterparts, typist and driver, office and laboratory space and facilities; operating funds for operation and maintenance of equipment, and purchase of expendable equipment and supplies.

2.3 OBJECTIVES OF THE PROJECT

2.3.1 Development Objectives

The development objectives of the Project were:

- to improve the quality of processed food products in Indonesia and, as a result, the efficiency of the food processing industries in the small-scale sector,

- to accelerate processed food products diversification through the utilization of as yet not utilized indigenous agricultural raw materials.

2.3.2 Immediate Objectives

The immediate objectives of the Project were:

- strengthen and up-grade the analytical and testing capabilities of IRDABI for food stuffs in general and processed foods in particular with an exclusive problem identification focus on the small-scale and rural industry,

- establish and bring into operation a laboratory scale, multi-purpose food processing capability at the Institute for developing processed food products from indigenous, including those as yet unutilized agricultural raw materials, especially for the benefit of the small-scale food industry, and

- strengthen IRDABI's capabilities for providing technical information and product quality improvement services to the small-scale food processing industry in conjunction with the small-scale industry extension services instituted by the Government, particularly those through BIPIK.

The objectives of the Project have been achieved. IRDABI now possesses modern facilities to develop new and/or improved food products, and have high-grade expertise to provide extension services and guidance to the small-scale food industry. The research and development as well as

the extension service capabilities obtained are being utilized to provide continuous on-the-spot guidance to the small-scale food industry in Blitar/East Java and Pandeglang, West Java regions. One of the fellows obtained a Master of Science degree in Food Research & Management. She is the Head of Institute for Development of Foods, Beverages and Phytochemical Industries; and would provide continued leadership for activities instituted under the Project, especially those for providing extension services and guidance to the small-scale food industry.

2.4 REPORTS

This Terminal Report includes only the most essential features of the accomplishments and cross reference is made to the detailed information contained in the 50 supporting reports and publications (Appendix V) prepared during the life of the Project.

3. RESULTS AND CONCLUSIONS

3.1 INSTITUTE OF RESEARCH AND DEVELOPMENT FOR AGRO-BASED INDUSTRIES

3.1.1 Organization and Responsibility

The Chemical Research Institute (CRI), of the Ministry of Industry was primarily responsible for providing some technical services to the agriculture-related industries. Its main function was testing of essential oils and product certification. However, in order to assist the country in its development effort and to meet the resultant requirements of industrial research and extension services for the agriculture-related industries CRI was, in May 1980, up-graded and named the Institute of Research and Development for Agro-Based Industries.

IRDABI comprises four institutes (Figure II), namely

i) Research Institute for Foods, Beverages and Phytochemical Industries,

ii) Research Institute for Chemurgy and Miscellaneous Industries,

iii) Institute for Development of Foods, Beverages and Phytochemical Industries, and

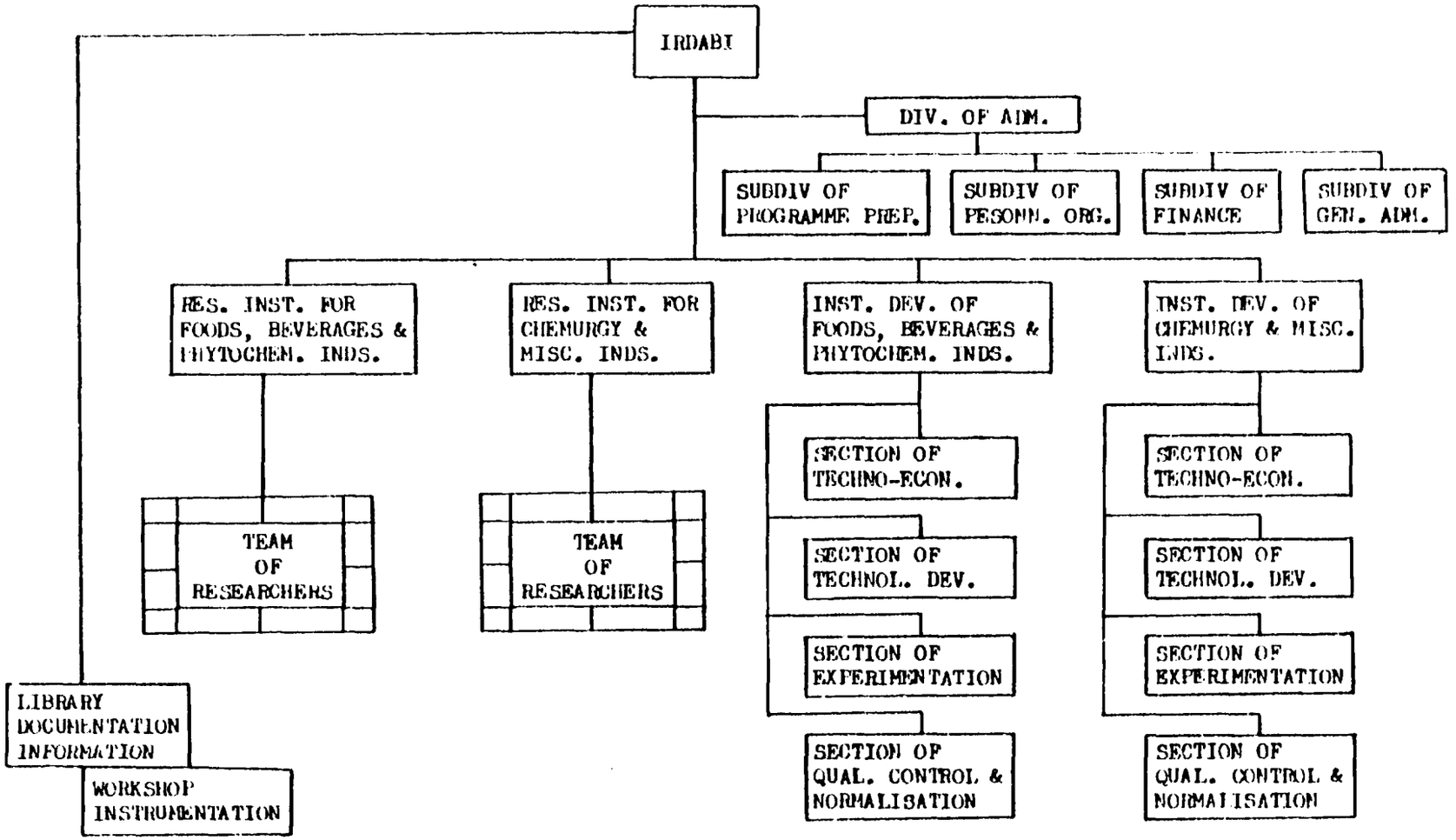
iv) Institute for Development of Chemurgy and Miscellaneous Industries.

The supporting services include Division of Administration, Library and Workshop.

There are 193 persons working in IRDABI. The staffing pattern of IRDABI is shown on page 10.

The Project activities generally relate to those of the Institute

Figure II. THE SCHEME OF ORGANIZATION OF INSTITUTE OF RESEARCH AND DEVELOPMENT FOR AGRO-BASED INDUSTRIES (IRDABI)



STAFFING PATTERN OF IRDABI

QUALIFICATIONS OF STAFFMEMBER	IRDABI	RES. INST. FOR FOODS, BEVERAGES & PHYTOCHEM. INDS.	RES. INST. FOR CHEMURGY & MISC. INDS.	INST. DEV. OF FOODS, BEVERAGES & PHYTOCHEM. INDS.	INST.DEV.OF CHEMURGY & MISC.INDS.	ADMINISTRATION LIBRARY & WORKSHOP
Ph.D.	1					
M.Sc.	4	1	1	1	1	
Ir., Drs., Dra.	23	6	3	9	5	
B.Sc., B.A.	37	8	9	4	9	7
SMA, SMP, OTHER	128	6	4	23	20	75
TOTAL	193	23	17	37	35	82

for Development of Foods, Beverages and Phytochemical Industries and also to those of the Research Institute for Foods, Beverages and Phytochemical Industries. The former institute has been designated as the counterpart institute for the Project.

3.1.2 Buildings

The main buildings of IRDABI are located in Bogor on Jalan Ir. H. Juanda. Most of the staff of the four institutes and the supporting services work there. Some of the staffmembers of the Institute for Development of Foods, Beverages and Phytochemical Industries are working at the Food Processing Laboratory in Cikaret/Bogor.

3.1.3 Food Processing Laboratory

No space was available at Jalan Ir. H. Juanda to put up a building and install the food processing machinery and equipment provided by UNIDO. However, IRDABI possessed a 5000 square meter lot adjacent to its Housing Complex in Cikaret, some three kilometers from IRDABI's main campus. IRDABI decided to construct the permanent building for the Food Processing Laboratory at that location (Figure V).

The construction of the building for the Food Processing Laboratory (Figure VI & VII) and installation of the ancillary facilities were completed in May 1981. The Project staff moved into the new premises in May 1981.

The equipment (Appendix IV) was installed and commissioned. A part of the equipment was installed by Metal Box Engineering of UK. Metal Box had contracted to supply the equipment, install it, commission it, and

also provide training, to the IRDABI staffmembers, in operation and maintenance of that equipment.

3.1.4 National Staffing of the Project

The Director of IRDABI acted as the National Team Leader.

IRDABI appointed 23 persons as national staffmembers (Appendix II) for varying periods during the life of the Project.

Most of the national staffmembers had the opportunity for varying periods to understudy the expert in their specialized fields. Nine senior national staffmembers received the orientation necessary for guiding their formal fellowship training.

Two national staffmembers are now working full-time on the two Outposted Teams, one stationed in Blitar/East Java and the other stationed in Pandeglang/West Java.

3.2 ACTIVITIES

3.2.1 Statistical Data

The technical extension service and guidance can be geared more profitably if one has adequate information available about the target group. Thus, as a preliminary step to conducting of the field surveys of the small-scale food industry, statistical data were collected on the type, number and location of such industry. The Provincial and District Industry Offices supplied the data shown in Tables 1 to 5 of Appendix VI.

The production of coconut palm sugar is the largest sector of the small-scale food industry. Of the 24,090 units, 73% are located in East

Java. Blitar region of East Java producers about 50 tons of coconut plam sugar per day. Later on, it was decided to station an Out-posted Team there to provide continuous on-the-spot extension service and guidance to the producers of coconut palm sugar (also see p.20).

The emping producing industry is another large sector of the small-scale food industry. Of the 11 708 units reported, 99% are located in West Java. Pandeglang region of West Java producers about 7 tons of emping per day. This region was also selected for the stationing of the Out-posted Team to provide continuous on-the-spot extension services and guidance to the emping producers (also see p.20).

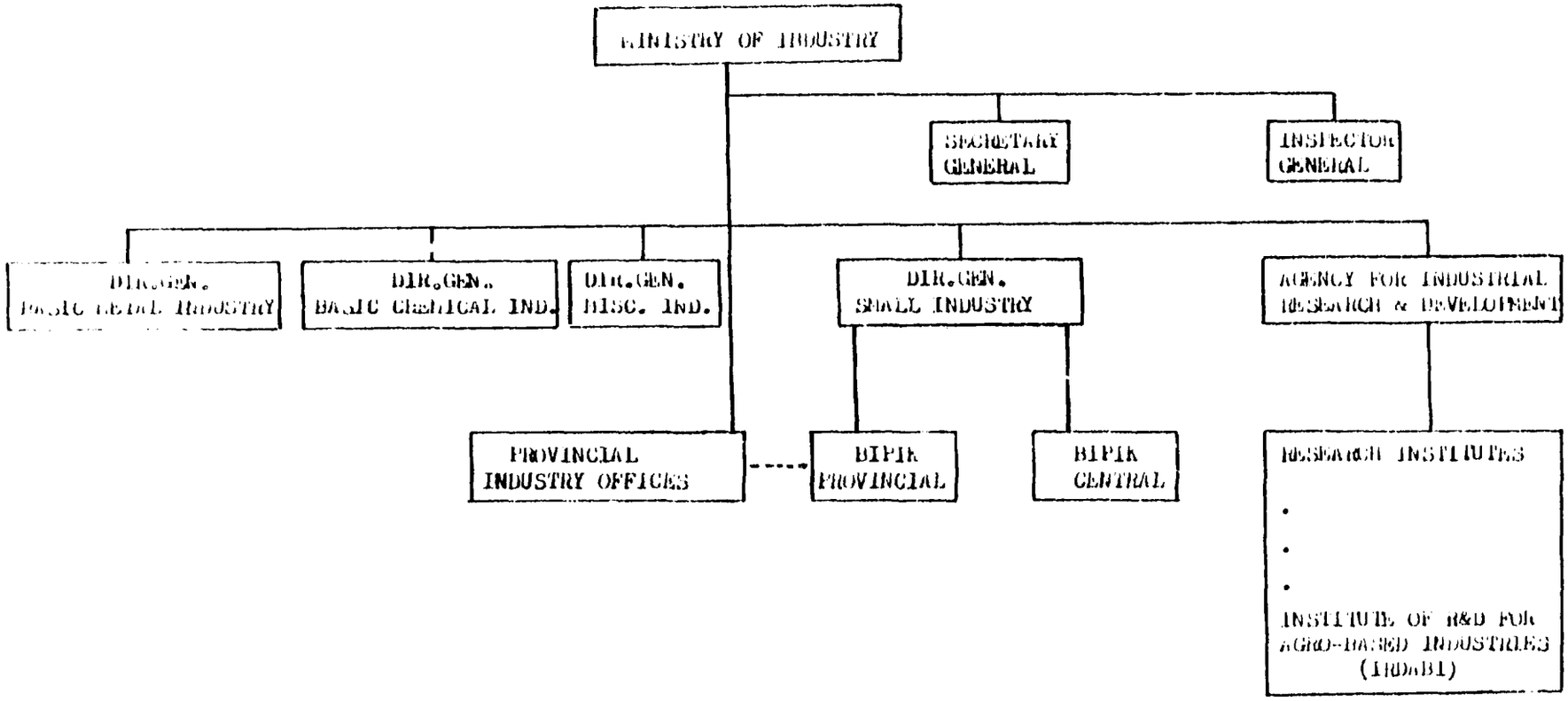
The data proved useful in planning and conducting the field surveys of the small-scale food industry.

3.2.2 Setting for the Field Surveys

The agencies responsible for the development of small industry in Indonesia are a) the Directorate General of Small Industry and b) Agency for Industrial Research and Development, both constituent bodies of the Ministry of Industry (Figure III).

The Agency for Industrial Research and Development is responsible for the major institutes which are the sources of new knowledge, and technology generating centres in specific fields. Bimbingan dan Penyuluhan Industri Kecil (BIPIK) - Guidance and Development of Small Industry, in the Directorate General of Small Industry, is the major programme for the development of small industry in the country. It is funded by the national Government but implemented through the Provincial Industry Officers (KANWIL

Figure III. THE SCHEME OF ORGANIZATION OF MINISTRY OF INDUSTRY



PERINDUSTRIAN). In each of the Provincial Industry Offices, there is a BIPIK unit, as in the Central office (Figure IV). The activities of BIPIK normally include extension service, management and technical training, marketing assistance, raw material supply, quality control and standardization and surveys. BIPIK provides extension services and guidance to the small industry through its corps of 2,500 Tenaga Penyuluh Lapangan (TPL) - Extension Service Official.

3.2.3 IRDABI-BIPIK Collaboration

It will be seen from the foregoing that IRDABI has no field offices for the dissemination of results of its research and development, and provide technical extension service to the small-scale food industry. On the other hand, BIPIK has a vast net-work, spread through-out the country, to guide and assist the small industry, including of course the small-scale food industry. It was therefore imperative for IRDABI to establish a close collaboration with BIPIK. A relationship, such as shown below, was envisaged:

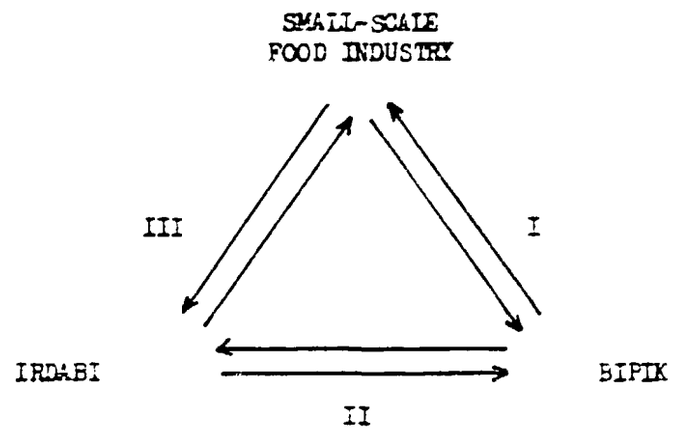
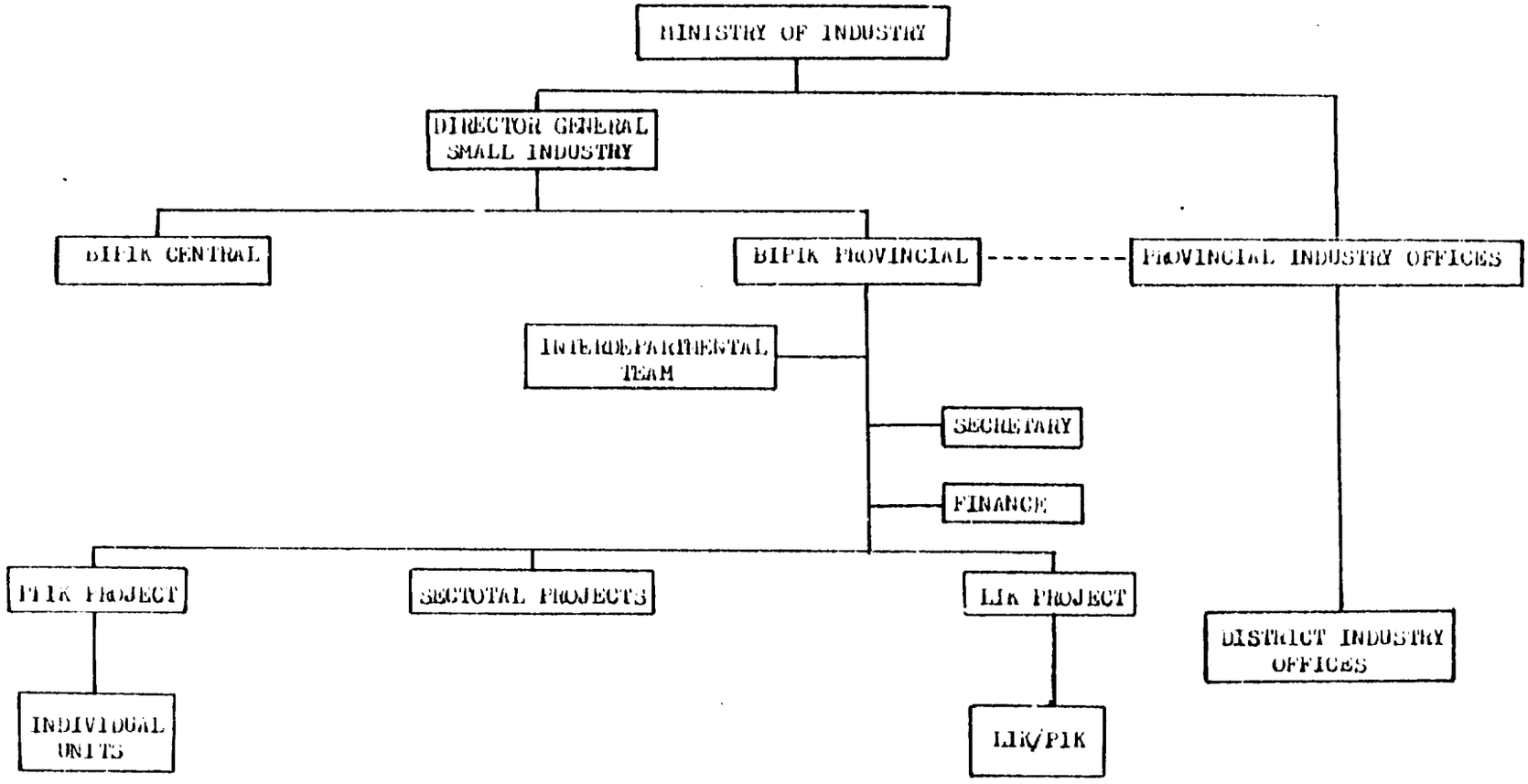


Figure IV. THE SCHEME OF ORGANIZATION OF BIPIK



Stage I — The two-way link of BIPIK providing extension service and guidance to small food industry and the small food industry seeking help from BIPIK already exists.

Stage II — IRDABI-BIPIK collaboration would assist IRDABI to establish contact with the small-scale food industry to learn of their activities and the problems they faced, and then provide the requisite technical extension services and guidance to them through BIPIK. This co-operation would also ensure follow-up on the implementation of IRDABI recommendations.

Stage III — The IRDABI/Small-Scale Food Industry link-up would materialize, in due course, as IRDABI establishes its credibility and wins industry confidence by solving their problems of product quality and process improvement and in other ways.

An informal but effective collaboration was established early on with BIPIK. This proved very helpful in conducting the field surveys of the small-scale food industry. The BIPIK Provincial Offices arranged the meetings with the small-scale food industry, and also deputed its staff-members to work on the Survey Teams.

3.2.4 Field Surveys

The Project teams, in collaboration with BIPIK officials, conducted four field Surveys (Appendix V - 1, 6 to 8 & 10). These teams covered 21 districts (Kabupaten) and municipal corporations (Kotamadya) in West Java and East Java. They visited more that 100 small-scale food industries engaged in producing different food products.

The teams collected information on production processes and

techniques, as well as on the problems encountered by the small-scale food industries. The problems faced by the small-scale food industry were identified (Appendix V - 9).

The various problems observed by the survey teams include improper quality of raw materials, out-moded production methods employed, insanitary conditions in the production area, poor packaging material and process used - all of which result in low quality of the food products produced.

The teams suggested on-the-spot improvements in processing methods and recommended products, and ways and means to improve the quality of their products. They were instructed and shown as to why a problem arose and how to solve it.

3.2.5 Instruction Manuals

The information obtained on the types of products, the methods employed and the problems encountered by the small-scale food industry and also the research and development work carried out in the Food Processing Laboratory helped in preparing 31 instruction manuals (Appendix V - 20 to 50) for different food products. These have been printed and distributed to the small-scale food industry entrepreneurs and employees, BIPIK extension service officials and others. These instruction manuals will be helpful to the small-scale food industry in producing food products of high quality, and more economically.

The instruction manuals have been prepared for the following food products produced in Indonesia:

Abon	Minyak Kacang Tanah
Bihun	Minyak Kelapa
Biji Mete	Oncom
Emping	Roti
Garam	Sagu Aren
Gula Aren	Sale Pisang
Hun Kwe	Sari Buah
Ikan Asin	Sirop
Kacang Asin	Soun
Kecap	Susu Segar
Kembang Gula	Tahu
Kembang Tahu	Tauco
Krupuk	Tempe
Limun	Tengteng (Jipang)
Manisan Buah	Terasi
Mie	

3.2.6 Development of New and/or Improved Food Products

The Project staff has carried out research and development work on processing of indigenous agricultural raw materials to determine their suitability and potential for the production of food products. Sixteen new and/or improved food products have been developed and introduced to the food industry. The instruction manuals for the production of these food products are under preparation. These products are:

Avocado	-	puree and frozen cubes
Banana	-	figs (candy) and flour
Cashew-apple	-	candy, chutney, jam, juice and wine
Mango	-	juice, squash, jam. chutney and pickle
Pine-apple	-	figs (candy) and jelly

3.2.7 Out-posted Teams

During the Tripartite Review held on 27 November 1981, it was recognized that results obtained from the extensive field surveys and the development work carried out under the Project on improvements in small-scale food processing and application of improved process technologies had large prospects for raising the capabilities of the small-scale and rural food processing industries to a level where their products could be accepted in wider regional or national markets. Therefore, it was necessary to concentrate efforts on extension service activities in the surveyed regions during the Project extension period.

In order to effectively consolidate these activities and link the small food industry extension services to the activities of IRDABI, and to assist in the improved implementation of programmes planned by the Directorate General of Small Industry and the Regional BIPIKs, posting of full-time teams comprising staffmembers of IRDABI and National Experts for providing continuous on-the-spot extension services and guidance in selected regions in Java was considered necessary.

These contacts will inspire the staff workers to concentrate their efforts on solving relevant problems and encourage them to continuously strive for professional achievement in solving the problems faced by the small-scale food entrepreneurs.

Although the out-posted team concept for posting two teams at Blitar/East Java and Pandeglang/West Java comprising locally hired UNDP-funded experts (National Experts) and IRDABI's staff could not be fully implement-

ed due to difficulties in recruiting full-time experts, the INDABI staff under the supervision of the National Project Director and the UNIDO Project Manager undertook this work. The detailed programmes of work (Appendix V - 18 & 19) for the Out-posted Teams were prepared. Beginning June 1982, these Out-posted Teams started providing continuous on-the-spot extension services and guidance to the small-scale food industry, especially those manufacturing coconut palm sugar in Blitar/East Java region and those producing emping in the Pandeglang/west Java region.

The continuous on-the-spot technical extension service provided by the Out-posted Team has helped the coconut palm sugar industry to obtain better yields and produce superior quality product. They can now sell their product at a higher price, by as much as Rp.25 to Rp.50 more per kilogram than previously. Since some 50 tons of coconut palm sugar are produced daily in the Blitar region, it means that an additionel daily income of Rp.1.25 million to Rp.2.5 million is generated for the region.

Several pieces of equipment have been designed and prototypes produced for roasting & shelling the melinjo seeds, and for flattening the kernels to make emping.

3.2.8 Collaboration with Food Industry

A close collaboration was established between INDABI and P.T. Unilever Indonesia under which:

- eleven INDABI staffmembers attended a 3-day training course in bakery products at the Food Preparation Laboratory of Unilever in Jakarta,

- Unilever agreed to procure several pieces of bakery machinery and equipment for donation to the small-scale producers of bakery products to assist them in improving their production methods and the quality of their

products. IRDABI was requested to recommend the names of bakery entrepreneurs,

- Unilever offered to assist IRDABI in conducting training courses for the small-scale producers of bakery products as well as for the extension service officials of BIPIK and Provincial Industry Offices, and

- a technical manual on bread production - Pembuatan Roti (Appendix V - 2) was prepared and distributed to the bakery industry.

3.2.9 Collaboration with PUSKOPTI and Regional BIPIKs

IRDABI is collaborating with Pusat Koperasi Produsen Tempe dan Tahu Indonesia (PUSKOPTI) - Central Co-operative of Indonesian Tempe and Tahu Producers, in their Rp.2.5 billion food processing plant, and with Regional BIPIK of Yogyakarta in the Perkampungan Industri Kecil project (PIK) - Working-cum-Residential Centre for Small Industry. The PUSKOPTI food processing plant would utilize tempe and tahu produced by the small-scale food processing entrepreneurs of PIK project. The food processing plant would manufacture processed food products wherein the major ingredients would be tempe and/or tahu, such as canned tempe, canned fried and salted tempe, tempe curry, canned tahu, canned fried tahu, canned tempe-tahu soup. IRDABI is assisting PIK project in producing tempe and tahu of better and standard quality to meet the requirements of the food processing plant. IRDABI is also providing consultancy services to PUSKOPTI in selecting machinery for their plant as well as in developing food products based on tempe and tahu that the PUSKOPTI plant would manufacture.

IRDABI is also cooperating with Regional BIPIK of West Java in their

Lingkungan Industri Kecil project (LIK) - Working Centre for Small Industry. for improving the quality of tempe and tahu produced in the Bandung region. PUSKOPTI is planning to set up a food processing plant in Bandung. This food processing plant, like the one in Yogyakarta, would manufacture processed food products wherein the main ingredients would be tempe and/or tahu. The LIK project would produce the raw material, i.e., tempe and tahu, for this PUSKOPTI food processing plant.

3.2.10 UNIDO-TPI Contract T81/04

The UNIDO-TPI Contract T81/04 provided institutional back-stopping support to IRDABI in achieving Project objectives of strengthening and upgrading the analytical and development capabilities of IRDABI for food stuffs in general and processed food products in particular, and to enable IRDABI to provide technical information and product quality control services to the small-scale and rural food processing industry.

TPI provided fellowship training at its facilities in England to eight IRDABI staffmembers in fields of fats and oils processing, instrumental analysis, general food analysis, pesticide analysis, amino acid analysis and vitamin analysis.

Two training officers from TPI worked at IRDABI for four months. Besides assisting the TPI-trained staffmembers in setting up their shops, the training officers conducted a course, in instrumental analysis and general food analysis, for IRDABI staffmembers.

3.3 TRAINING AND EXTENSION

3.3.1 Fellowship Training

The fellowship training programme provided a greatly needed opportunity for IRDABI to up-grade its expertise in fields of food processing, food analysis and quality control. Nine staffmembers (Appendix III) completed training in food research and management, fats and oils processing, fruits and vegetables processing, instrumental analysis, general food analysis, pesticide analysis, amino acid analysis, and vitamin analysis.

One fellow obtained a Master of Science degree in Food Research and Management from the Queen Elizabeth College, London. She is the Head of Institute for Development of Foods, Beverages and Phytochemical Industries; and would provide continued leadership for activities instituted under the Project, especially those for providing extension services and guidance to the small-scale food industry.

3.3.2 In-service Training

Most of the counterparts had the opportunity for varying periods to understudy the expert which provided for their in-service training at various levels in their respective areas of work. This training proceeded by several means: participation of the counterparts with the expert in field visits, surveys, and programming of work, participation in special training courses conducted by the expert, assignments for execution by the counterparts, and reading material and references brought to their attention by the expert.

Because of the new responsibility of research and development for agro-based industries the activities undertaken by IRDABI had increased manyfold, and the need for personnel trained in principles of food processing had increased likewise. However, many of the IRDABI staffmembers did not have any formal knowledge and experience of principles of food processing. It was, therefore, deemed desirable to afford an opportunity for IRDABI staffmembers to participate in a training course in principles of food processing so that they could get acquainted with the language and terminology of the subject as well as recognize the relationship of the various disciplines to one another as applicable to solving problems of the food industry.

The course was designed and conducted to acquaint the IRDABI staffmembers with composition of foods, agents causing changes in foods and the factors influencing these changes, and finally the processing and handling techniques for preserving foods and preventing their spoilage. Material was included to provide information on relationship of food to nutrition and disease as they affect the general well-being of the individuals.

3.3.3 Non-staff Courses

Practical training was provided in courses and demonstrations (Appendix VII - 3 to 5, 16 & 17) for small-scale food industry entrepreneurs and employees, extension service officials of BIPIK, school supervisors and others.

3.3.4 Out-reach Courses

Many small-scale food industry entrepreneurs and employees have difficulty in finding time and funds to attend training courses at IRDABI. In order to provide for their training and assist them improve the quality of their products and the processes they use, IRDABI conducted several training courses (Appendix VII - 6, 8 & 9, 14 & 15, 19 to 21) in the field. These courses were attended by fish processors, producers of aren sugar, food and essential oil processors, tahu manufacturers, and copra producers.

3.3.5 Extension Services

Project extension services consisted of technical assistance offered on an ad hoc basis during field visits or through consultations, advice in response to specific formal enquires, dissemination of the Project published reports, demonstrations, etc. Conditions necessitated that extension service be largely incidental. There is no official means by which extension services could be offered on a planned basis.

The activities of IRDABI have increased tremendously, therefore, there is urgent need for IRDABI to strengthen the extension service activities to disseminate the results of its research and development activities and, thus, help in the industrial advancement of the country.

3.3.6 Publications

The main medium adopted by the Project for disseminating its results of research and survey findings has been the issuance of separate publications, 50 to date (Appendix V). Most of the publications prepared are

instruction manuals for the production of different food products produced in Indonesia. These instruction manuals have been specifically prepared to assist the small-scale food industry entrepreneurs and employees to help them in improving the quality of their products and the processes they use. These are also of assistance to the BIPIK extension service officials to enable them to provide the needed extension service and guidance on-the-spot to the small-scale food industry in their respective regions.

4. RECOMMENDATIONS

The Institute of Research and Development for Agro-Based Industries (formerly Chemical Research Institute) is a widely recognized entity that has made a notable impact on the food industry, especially small-scale food industry.

The Institute has, through the Project, up-graded its expertise and facilities. The staffmembers are adequately trained, equipment and facilities are excellent and sufficient to cater for most expansion in operations foreseen in the near future.

The Institute should strengthen the extension service activities, and continue the work of the Out-posted Teams, and the product development work.

4.1 Extension Service Activities

With the tempo of industrial development of the country quickening, more and more food industry entrepreneurs, small as well as large, would need technical advice and guidance in setting up and/or up-grading their production facilities and also for improving the quality of their products. The Institute should, on its own, endeavour to disseminate the accumulating results of its research and development activities for utilization and, thus help in the industrial advancement of the country.

A system is needed for the dissemination of information, and for providing technical assistance and advisory services. The extension services should be formalized and staffed so that authentic responsible technical advice can be rendered in collaboration with profissional sections.

4.2 Out-posted Teams

Many small food industry entrepreneurs and employees have difficulty in finding time and funds to attend formal training courses or they cannot afford to sacrifice earnings for this purpose. Therefore, the improvement in skill formation has generally to take place on-the-job.

The Institute is currently providing on-the-job technical assistance and guidance to the manufacturers of coconut palm sugar and emping in the Blitar region of East Java and the Pandeglang region of West Java, respectively. This assistance has started paying high dividends. These industries have been able to obtain higher yields and produce products of better quality. Their incomes have increased considerably. There is urgent need to expand this work to other regions and cover other products. Adequate funds should be provided to continue and expand this out-reach activity.

4.3 Product Development

The research work on the utilization of agricultural raw materials for developing new and/or improved products should continue. These new products should be introduced to the food industry. Instruction manuals for these products should be prepared and distributed to the food industry.

4.4 Follow-up

The Institute should, through BIPIH as well as on its own follow-up these activities and determine the benefits derived by the small-scale food industry. The association amongst small-scale food industry, BIPIH and the Institute should be actively persued.

Appendix I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

PROJECT IN THE REPUBLIC OF INDONESIA

28 November 1978

JOB DESCRIPTION
DP/INS/76/001/11-01/31.3.A

POST TITLE	Project Manager/Expert in Research and Development Food Processing
DURATION	One year; with possibility of extension
DATE REQUIRED	As soon as possible
DUTY STATION	Bogor, Indonesia

DUTIES

The expert will be assigned to the Chemical Research Institute (CRI) where he will work in close co-operation with the national staff and other local specialists and experts. He will assist in establishing and commencing operation of the processed food development laboratory and in initiating and assisting in the implementation of processed food development experimentation. Specifically, the expert will be expected to:

1. Assist in the planning and co-ordination of the Institute's activities in his field of specialization,
2. Assist and take active part in providing technical consultancy services to food processing industries in order to improve their operations and the quality of their products, with emphasis on (a) food processing hygiene; (b) improvement of specific unit operations; (c) quality control of raw materials and finished products,

3. Assist and take active part in the organization and carrying out of laboratory experimentations at the Institute laboratory aimed at directly assisting industry and supporting consultancy services activities,

4. Assist and take active part in introducing modern quality control systems and techniques in the food processing industries,

5. Co-operate with and provide advice to other experts carrying out market and feasibility studies in the fields of processed foods and food processing industries,

6. Assist and take active part in the preparation of training programmes for and in the training of local staff in the above fields, and

7. The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS — University degree in food chemistry or technology, with extensive (i.e., fish, vegetables and fruit) processed food manufacturing, research and development, and quality control experience.

LANGUAGE — English

BACKGROUND INFORMATION — The project was initiated some time in 1975 when a Project Document was drafted on the basis of studies and discussions by UNIDO personnel. The overall, immediate objective of the project is to strengthen the activities and capabilities of the Chemical Research Institute (CRI) in Bogor in the field of processed food evaluation and development so that it can provide improved services and on a broader scope as at the present time, to the small-

scale food processing industries and the Government. The Government decided that the Institute under the Directorate General of Miscellaneous Industries, will play a leading role in the development.
Due however, to the delay in financing, etc., it was decided to expedite implementation by instituting Preparatory Assistance, which was implemented during 1978.
The CRI has a vast experience, primarily in the testing of essential oils. To implement the Government's decision to strengthen CRI's capability of providing technical information and product quality improvement services to food processing industry, UNDP/UNIDO assistance wi'l be provided. During this assistance among others, attention will be paid to the developments of processed products from local agricultural commodities as yet unused for further development/growth of the small-scale industry.

Appendix II

PROJECT STAFF

International Staff	Dates of Assignment
UNIDO	
M. Latif Rasulpuri, Project Manager Expert in R&D Food Processing	April 1979 - December 1982
On Contract	
G.E. Howard, Training Officer	September 1981 - October 1981
S.J. Bainton, Training Officer	September 1981 - October 1981
National Staff	
Dardjo Somaatmadja, National Team Leader & Director of IRDABI	April 1979 - December 1982
Djoewarni Ali, Assistant to Director of IRDABI	May 1980 - February 1982
J.M. Pasaribu, Administration Officer	May 1980 - December 1982
Atih Surjati Herman, Analyst	May 1980 - August 1980
Head, Institute for Development of Foods, Beverages & Phytochemical Industries, IRDABI	June 1981 - August 1981
A. Pandji Widjaja, Analyst	May 1980 - August 1980
Endah Djubaedah Jusuf, Analyst	May 1980 - August 1980
Joeswadi, Analyst	May 1980 - August 1980
M.A. Dachlan, Analyst	May 1980 - August 1980
H. Mansjur, Building Supervisor	May 1980 - April 1982
Mulyono Kasim, Workshop Supervisor	May 1980 - August 1980
Oni Suryaman, Analyst	August 1980 - May 1981

Harry Wiriano, Analyst	August 1980	- April 1982
Dedi Mahdar, Analyst	August 1980	- April 1982
Wiarsih, Analyst	August 1980	- April 1982
Renawati Iskandar, Analyst	August 1980	- April 1982
Md. Meiyanti, Analyst	September 1980	- May 1981
Subardjo, Analyst	June 1981	- April 1982
Amat Karnadi, Analyst	June 1981	- April 1982
G.B. Tjiptadi, Head of Institute for Development of Chemurgy & Miscellaneous Industries, IRDABI	May 1982	- December 1982
A. Basrah Enie, Acting Head of Research Institute for Foods, Beverages & Phytochemical Industries, IRDABI	May 1982	- December 1982
Yang Yang Setiawan, Analyst	May 1982	- December 1982
Sardjono, Analyst	May 1982	- December 1982
Bachtiar, Typist	May 1982	- December 1982

Appendix III

FELLOWSHIP

Name	Field of Training	Training Institute	Dates
Abdul Ghani[a]	Instrumental Analysis	Tropical Products Institute, London	April 1980 - November 1980
Casik Darma	Pesticide Analysis	Tropical Products Institute, London	May 1980 - December 1980
Joeswadi	General Food Analysis	Tropical Products Institute, London	January 1981 - June 1981
Djanaka Sumadhiharga	Amino Acid Analysis	Tropical Products Institute, London	May 1981 - August 1981
M.A. Dachlan	General Food Analysis	Tropical Products Institute, London	May 1981 - November 1981
A. Pandji Widjaja[b]	Fats & Oils Processing	Tropical Products Institute, London	July 1981 - December 1981
Atih S. Herman[c]	Food & Management Science	Queen Elizabeth College, London	September 1981 - September 1982
Sumarsi Budihardjo	Vitamin Analysis	Tropical Products Institute, London	September 1982 - December 1982
Endah D. Jusuf	Fruit & Vegetable Processing	University of Hawaii, Honolulu	August 1982 - February 1983

a Appointed (April 1981) Head, Institute of Research & Development for Industry, Ujung Pandang.

b Appointed (April 1981) Head, Institute of Research & Development for Industry, Banda Aceh.

c Obtained a Master of Science degree in Food and Management Science.

Appendix IV

EQUIPMENT

		c.i.f. (US $)
Canning Equipment		58,900
MINIPAC III Package Boiler, capable of evaporating 228 kg/hour steam, working pressure 10 bar	1	
LMF Compressor Type L280-100, fully automatic, working pressure 9.7 bar	1	
Can Seaming Machine, MBIA, complete with one set of changeparts to suit 307 diameter cans	1	
Additional set of change-parts for MBIA, to suit		
Can diameter size 211	1	
Can diameter size 301	1	
Can diameter size 411	1	
Cannery Testing & Measuring Instruments, consisting of:		
Cut-out Can Opener	1	
Ball Anvil Micrometer for measuring plate-thickness	1	
Seam Micrometer (metric)	2	
Actual Overlap Slide Rule	1	
Percent Butting Slide Rule	1	
End-Cutting Nipper	2	
Closing-Temperature Test Thermometer	2	
Spearpoint Vacuum Guage	2	
Metal Box Lye Peeler/Blancher	1	
Metal Box Line Exhauster; sufficient to allow for exhausting 307 diameter can for up to 10 minutes	1	
Double-Jacketted Steam Kettle, 20-gallon capacity	1	

		c.i.f. (US $)
Double-Jacketted Steam Kettle, 5-gallon capacity	1	
Vertical Retort for processing glass jars and cans	1	
Crates for Vertical Retort	2	
King Electric Hoist & Mounting Track, Model MEL 1/2-IOH 1351	1	
Robin Smiley Tomato Peeling Knives	6	
Never-Stain Paring Knives	12	
Canning Knives	12	
Vegetable Knives	12	
Sani-Safe Stainless Steel Canning Knives, 3½" blade	12	
Sani-Safe Stainless Steel Paring Knives, 3 1/4" blade	12	
Peeling, Slicing & Cutting Equipment		3,965
POTATO Peeler, Model 51238, capacity 100 kg/ hour, complete with		
Stand		
Spare Cylinder (scraping wall)		
Waste bucket strainer		
HOBART NO.12 Mincing Attachment complete with:		
Worm, Cylinder Adjusting Ring		
3 x 4 Bladed Knives		
3 Plates 1 x 3/8", 2 x 3/16"		
Tinned Steel Feedpan (A137136)		
Feedstick		
Outlet Guard		
HOBART NO.12 Vegetable Slicer Attachment, complete with:		
Lever Handle Front		
Stainless Steel Scimitar Knife		
Plate Holder		

		c.i.f. (US $)
Coarse Shredder Plate		
Fine Shredder Plate		
9" Chipper Plate with Stainless Steel Knives ½"		
9" Julienne Plate with Stainless Steel Knives		
HOBART NO.12 Dicing & Chipping Attachment with:		
1/4", 3/8", 1/2" Grid Plates		
<u>Syrup & Beverage Equipment</u>		24,300
Pulper/Siever, stainless steel contacting parts, front delivery and rear discharge for waste products. Complete with three interchangeable mesh stainless steel/Monel sieves (0.023", 0.027" and 0.063"). Average capacity ½ ton per hour.	1	
Bottle Filling Machine, HEXUDA Popular Type "A". Pilot scale piston filler with adjustable fill between 50-625 ml.	1	
Lightning Mixer SDI.	1	
Stock Pots with cover, stainless steel, capacity 100 quarts	2	
Drum 60 gallon type 316 w/316 outlet & plug and type 304 handles	2	
Loose covers, 60 gallon type 316	2	
Hold down cover, 14 gallon type 316 with 25 lb. weight type 316	1	
Dolly, 60 gallon type 304	2	
Bench dial scale, 200 lb. 13" diameter	1	
<u>Refrigeration Equipment</u>		9,850
Bally pre-fabricated, walk-in cold room 11'-7" x 5'-10" x 7'-6"; system BSC-75		
Bally pre-fabricated, walk-in freezing room 11'-7" x 5'-10" x 7'-6"; refrigeration system AZ-200A		

		c.i.f. (US $)
Insulated Coat for cool-room, Style No.34. Nylon shell filled with polyester fiberfil insulation.		
Medium size	2	
Small size	2	
Packaging Equipment		3,127
Automatic Vacuum-Packaging Machine, Model Multivac AG900		
Heat sealing appliances		
Bakery Equipment		7,520
HOBART Electric Mixing Machine Model SE-601, complete with:		
60 QT. Tinned Steel Bowl		
60 D. Beater		
60 D. Whip		
60 EP. Hook		
60 QT. Extension Rim		
HOBART NO.12 2AE Coffee Mill Attachment, complete with:		
Metal Hopper		
Receiving Can		
MEMMERT Universal Oven, Type UL 40	1	
Baker and Mixing Bowl, Seamless drawn of 18 gauge stainless steel, Capacity 4 gallon	2	
Baker and Mixing Bowl, Seamless drawn of 16 gauge stainless steel, capacity 11 gallon	2	
Mixing Bowl, Seamless drawn of stailess steel, capacity 5 quarts	2	
Meat Processing Equipment		7,390
Meat Saw, cabinet, table, meat gripper, short-cut plate stainless steel; table height 35-38" and depth 21½"; blade 112" x 5/8"; 1,5 HP motor	1	

	c.i.f. (US $)
Blades for Meat Saw	12
Meat Hand Saw, Stainless Steel ½" wide and 19" long frame	1
Blades for Meat Hand Saw	12
Meat Mixer, Portable Floor Model; stainless steel base cabinet, tub and lid; safety device provided to disengage paddle mechanism and safety lid to shut off motor when opened; 1 HP motor; capacity 150 lbs.	1
Sausage Stuffer, F. Dick Upright No.130, capacity 30 lbs., with four stuffer tubes - 3/8", ½", 3/4" and 1" diameter	1
Cartilage Knife, 215 mm	20
Boning Knife, 6" Narrow Stiff Stainless Steel Blade, Plastic Handle (Victorinox)	3
Boning Knife, 6" Narrow Flexible Stainless Steel Blade, Plastic Handle (Victorinox)	3
Boning Knife, 6" Curved Semi-Stiff Stainless Steel Blade, Plastic Handle (Victorinox)	3
Boning Knife, 6" Narrow Semi-Flexible Stainless Steel Blade, Plastic Handle (Victorinox)	3
Boning Knife, 6" Wide Heavy Stiff Stainless Steel Blade, Plastic Handle (Victorinox)	3
Breaking Knife, 10" Stainless Steel Blade, Plastic Handle (Victorinox)	4
Skinning Knife, 5" Stainless Steel Blade, Plastic Handle (Victorinox)	4
Butcher Knife, 12" Stainless Steel Blade, Plastic Handle (Victorinox)	2
Cooks' Knife, 12" Stainless Steel (2 3/8" wide at Handle) Blade, Plastic Handle (Victorinox)	2
Cooks' Slicer, 12" Stainless Steel (1 1/4" wide at Handle) Blade, Plastic Handle (Victorinox)	2

		c.i.f. (US $)
"All Use" Meat Cleaver, 9" Stainless Steel Rocker Edge Blade, 2 3/4 lb. (F. Dick)	1	
"S" Hook, Solid Stainless Steel, 8" x 3/8" (STANcase)	6	
Boning Hook, Stainless Steel Hook Pinned to Solid Aluminium Handle (STANcase)	2	
Combination Stone, one side course Silicon Carbide for taking the nicks and the other side fine Silicone Carbide for finishing keen edge	2	
Butcher Steel, Multicut, 12", Ebonized Wood Handle, Nickel Plated Fittings (F. Dick)	1	
Meat Testing Thermometer 5" stem	3	
Meat Testing Thermometer 8" stem	3	
Oil Processing Equipment		17,080
Hander Laboratory-size Oil Plant		
Seed Crusher Type "AA"		
Oil Expeller New Type "52" with accessories and spare consumption parts		
Filter Press Type "A" with accessories		
5 HP Electric Motor for the above three machines		
Common Steel Base for the above		
Extra Spare Parts for 3 years		
Seed Scorcher Type "LL" with 2 HP Electric Motor		
General Food Processing Equipment		6,500
Strahman Instant Hot Water Maker, complete with dial thermometer, 50 foot hose assembly, spray nozzle and stainless steel hose rack, with additional one replacement cartridge	1	
Food Handling Truck, 16 gauge stainless steel body, capacity 225 lbs., inside dimension 29 3/4"L x 19 1/2"W x 14 1/2"D, inside surface polished and seamless, Four 3" swivel casters,	2	

		c.i.f. (US $)
two stainless steel grab-handles spot welded to the body (STANcase)		
Utility Truck (trolley), Three-shelf stainless steel, 35½"H x 18"W x 27"L Shelf size 16" x 22", clearance between shelves 10", Four 5"-swivel Casters.	2	
Tilting Pail, tapered, capacity 13 Quarts, seamless drawn from 18-8 Type 316 stainless steel (STANcase)	4	
Tilting Pail, tapered, capacity 16 Quarts, seamless drawn from 18-8 Type 316 stainless steel (STANcase)	4	
Funnel, stainless steel, capacity 13 oz., top diameter 5", height 5 1/4" (STANcase)	2	
Ladle, stainless steel, capacity 12 oz., bowl diameter 4 3/8", bowl depth 2 1/8", handle length 12 1/8" (STANcase)	2	
Dipper, One Quart Capacity, stainless steel, diameter at top 5½", depth 3 3/4", handle 7" long (STANcase)	2	
Flat-Bottom Dipper, stainless steel, capacity 4 Quarts, top diameter 8½", depth 5½" (STANcase)	1	
Flat-Bottom Dipper, stainless steel, capacity 2 Quarts, top diameter 7", depth 4 1/4" (STANcase)	1	
Graduated Measure, stainless steel, Heavy gauge, 32 oz. capacity (STANcase)	2	
Scoop, stainless steel, capacity one quart, bowl diameter 4 1/4", length 6 5/8", handle length 4" (STANcase)	2	
Spoon, stainless steel, solid 15" long (STANcase)	2	
Spoon, stainless steel, solid 21" long (STANcase)	2	
Spoon, stainless steel, pierced 15" long (STANcase)	2	
Fork, stainless steel, 15" long (STANcase)	2	
Fork, stainless steel, 21" long (STANcase)	2	

		c.i.f. (US $)
Collander, seamless drawn stainless steel, capacity 11 quarts, 15 1/8" x 6½" (STAN case)	2	
"VIKING" General Purpose Brushes, No.43; white composition block filled with Du-Pont "Tynex" nylon bristles, 6" long x 2½" wide	12	
"HERCULES" Clean-up Brushes, No.45-S. 8" block filled with Crimped Du-Pont "Tynex" nylon bristle	12	
"HERCULES" Long-Handle Clean-up Brush No.20-45. 20" long handle. Brush face 5" long x 5½" wide. Du-Pont "Tynex" nylon bristle	12	
Storage containers w/cover, stainless steel 22 gauge, 2 quarts capacity	6	
Storage containers w/cover, stainless steel 22 gauge, 6 quarts capacity	6	
Stock pot w/cover, stainless steel, 20 gauge, 20 quarts capacity	4	
Stock pot w/cover, stainless steel, 20 gauge, 60 quarts capacity	4	
Display trays, stainless steel	6	
Food service pans, w/cover, stainless steel, 8 1/4 quarts capacity	6	
Laboratory Equipment		11,640
Multipoint Recorder, Leeds & Northrup 250 Series Catalogue No.252-15-000-10-01-0065-8-ACDFO; with	1	
Speedomax 250 Series Strip Charts; Part No. 545048		
Optional Extras		
Thermocouples, CNS Needle-type, for 211 cans	10	
Thermocouples, CNS Needle-type, for 300 cans	10	
Thermocouples, CNS Needle-type, for 307 cans	10	
Thermocouples, CNS Needle-type, for 401 cans	10	
C-5 Thermocouple Receptacles	20	
C-11 Combination Can Punch & Countersink	1	

	c.i.f. (US $)
C-13 End Wrench	1
C-14 Thermocouple Spanner Wrench	1
C-15 Awl	1
C-16 Receptacle Gaskets	300
C-17 Thermocouple Gaskets	200
HEAT PENETRATION CABLE, 10 wires, 15 feet long, distance from stuffing box to connectors on cans in retort approx. 2 feet. Distance from stuffing box to potentiometer approx. 13 feet, using: TEF-20 Wire	1
C-24 Retort Stuffing Box with 1" pipe thread, installed	1
C-6 Thermocouple Connectors, male, installed	10
C-25 Switch, installed	1
Thermometer, -20 to +110°C	2
Thermometer, -20 to +150°C	2
Thermometer, 2-inch dial, 0 to 50°C	2
Thermometer, 2-inch dial, -10 to +110°C	2
Thermometer, 2-inch dial, 0 to 150°C	2
Remote dial thermometer, 6' cable, 60/250°F	2
Remote dial thermometer, 6' cable, 100/300°F	2
Pocket thermometer, 1" diameter, 40/160°F	3
Pocket thermometer, 1" diameter, 0/220°F	3
Hand Refractometer, sugar percentage	
ATAGO, N1 Range 0 - 32 %	1
ATAGO, N2 Range 28 - 62 %	1
ATAGO, N4 Range 45 - 82 %	1
Beaker Tongs, safety	3
Waring Blender One-Gallon capacity, Waring 240CB-6, 240V 50 Hz. (3402-P25)	1
Container Px Glass 5-Cup with Blending Assembly without Cover (EQUAL TO 3392-J05)	1

		c.i.f. (US $)
Cover for 215-475	1	
Container Only 5-Cup (EQUAL TO 3392-J10)	2	
Small Jar Adapter, Waring AD-1 (3402-G15)	1	
Rotor and Bearing Assembly (3402-G20)	1	
Blade, waring 2877 (3402-G25)	1	
Motor Brush, Waring 3222, set of 2/ea (3402-G35)	1	
Cover Gasket, Waring 4947 (3402-G45)	1	
Washer S/S, Waring 2973 (3402-G50)	1	
Washer Teflon, Waring 4746 (3402-G55)	1	
Wrench, Waring 2963 (3402-G90)	1	
Homogenizer, Hand Operated S/S (3444-H20)	1	
Hygrometer, Comfortguide (6066-N10)	1	
Sieve USA Standard 8 inches Full Height, Brass No.10 Mesh 9	1	
Ditto No.20 Mesh 20	1	
Ditto No.40 Mesh 35	1	
Ditto No.60 Mesh 60	1	
Ditto No.80 Mesh 80	1	
Ditto No.100 Mesh 100	1	
Sieve USA Standard 8 inches Full Height, Brass No.140 Mesh 150	1	
Ditto No.200 Mesh 200	1	
Ditto No.270 Mesh 270	1	
Ditto No.400 Mesh 400	1	
Sieve Cover, 8 inch diameter, Brass	1	
Sieve Receiver, 8 inch diameter, Brass	1	
Sieve Shaker, W.S. Tyler RX24-1, 220. 50 Hz	1	
Balance Harvard Triple Single Beam, Model 1454-SD (1368-D40)	1	
Balance Weights, IOIM, 500 gm to 1 gm/set	1	
Project Vehicle		8,610
Toyota Landcruiser Hardtop, Model FJ40RV-UC; with one spare tyre and standard tool set		

Appendix V

LIST OF PUBLICATIONS

1. Sample Survey of the Small-Scale Food Industries in Java - M. Latif Rasulpuri, Chemical Research Institute, Bogor. 1980. English.

2. Pembuatan Roti - Harry Wiriano, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. Indonesian.

3. Training Report on Instrumental Analysis, Tropical Products Institute, London - Abdul Ghani, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1980. English.

4. Training Report on Pesticide Residue and Formulation Analysis. Tropical Products Institute, London - Gasik Darma, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1980. English.

5. Syllabus of Food Preservation Course for the Provincial Nominees of the Director - General of Small Industry; by M. Latif Rasulpuri and Atih Surjati Herman; 1981 - Atih Surjati Herman, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. Indonesian.

6. Field Survey of Small-Scale Food Industries. I. Kabupaten Sukabumi, Kabupaten Cianjur, Kotamadya dan Kabupaten Bandung, Kabupaten Garut, Kabupaten Tasikmalaya, Kabupaten Ciamis; by M. Latif Rasulpuri and Dedi Mahdar; 4 to 22 November 1980 - Dedi Mahdar, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. Indonesian.

7. Field Survey of Small-Scale Food Industries. II. Kotamadya dan Kabupaten Bogor; by M. Latif Rasulpuri, Harry Wiriano, Meiyanti, Wiarsih and Renawati Iskandar; 27 to 29 November 1980 - Harry Wiriano, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. Indonesian.

8. Field Survey of Small-Scale Food Industries. III. Kabupaten Pandeglang, Kabupaten Serang, Kabupaten Bekasi, Kabupaten Karawang, Kabupaten Indramayu, Kotamadya dan Kabupaten Cirebon, Kabupaten Majalengka, Kabupaten Sumedang; by M. Latif Rasulpuri and M.A. Dachlan: 2-20 December 1980 - M.A. Dachlan, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. Indonesian.

9. Field Survey of Small-Scale Food Industries - Identification of Problems - M. Latif Rasulpuri, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. English.

10. Field Survey of Small-Scale Food Industries. IV. Gula Siwalan, Gula Kelapa, Sirop Temulawak and Jenang; East Java; by M. Latif Rasulpuri and Joeswadi; 13-27 October 1981 - M. Latif Rasulpuri: Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. English.

11. Training Report on General Food Analysis, Tropical Products Institute, London - Joeswadi, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. English.

12. Training Report on Amino Acid Analysis, Tropical Products Institute, London - Djanaka Sumadhiharga, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1981. English.

13. Training in Instrumental Analysis and General Food Analysis conducted at Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor; September and October 1981 - G.E. Howard and Juliet Bainton, Tropical Products Institute, London. 1981. English.

14. Training Report on General Food Analysis, Tropical Products Institute, London - M.A. Dachlan, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. English.

15. Training Report on Fats and Oils Processing, Tropical Products Institute, London - Ahmad Pandji Widjaja, Balai Penelitian dan Pengembangan Industri, Banda Aceh. 1982. English.

16. Training Report on Food Research and Management, Queen Elizabeth College, London - Atih Surjati Herman, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. English.

17. Determination of the Glucosinolate Content of Various Samples of Oilseed Rape and of Mustard Seed, Particularly Those from Bangladesh - Research report submitted to Food Science Department, Queen Elizabeth College, University of London in partial fulfilment of the requirements for the Master of science degree in Food Research and Management - Atih Surjati Herman, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1980. English.

18. Programme of Work for Out-posted Team No. 1, Blitar, East Java - M. Latif Rasulpuri, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. English.

19. Programme of Work for Out-posted Team No. 2, Pandeglang, West Java - M. Latif Rasulpuri, Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. English.

Process Manuals for production of various traditional food products in Indonesia:

20. Pembuatan Kecap. Publikasi No. 1. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

21. Pembuatan Kerupuk. Publikasi No. 2. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

22. Pembuatan Tempe. Publikasi No. 3. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

23. Pembuatan Ikan Asin. Publikasi No. 4. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

24. Pembuatan Minyak Kacang Tanah. Publikasi No. 5. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

25. Pembuatan Sagu Aren. Publikasi No. 6. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

26. Pembuatan Jipang. Publikasi No. 7. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

27. Pembuatan Bihun. Publikasi No. 8. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

28. Pengolahan Biji Mete. Publikasi No. 9. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

29. Pembuatan Roti. Publikasi No. 10. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

30. Pembuatan Tauco. Publikasi No. 11. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

31. Pembuatan Tahu. Publikasi No. 12. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

32. Pembuatan Sale Pisang. Publikasi No. 13. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

33. Pembuatan Oncom. Publikasi No. 14. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

34. Pembuatan Kacang Asin. Publikasi No. 15. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

35. Pembuatan Terasi. Publikasi No. 16. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

36. Pembuatan Sari Buah. Publikasi No. 17. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

37. Pembuatan Soun. Publikasi No. 18. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

38. Pembuatan Sirop. Publikasi No. 19. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

39. Pengawetan Susu Segar. Publikasi No. 20. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

40. Pembuatan Tepung Hunkwe. Publikasi No. 21. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

41. Pembuatan Minyak Kelapa. Publikasi No. 22. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

42. Pembuatan Kembang Gula. Publikasi No. 23. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

43. Pembuatan Emping. Publikasi No. 24. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

44. Pembuatan Mie. Publikasi No. 25. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

45. Pembuatan Manisan. Publikasi No. 26. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

46. Pembuatan Kembang Tahu. Publikasi No. 27. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

47. Pembuatan Garam. Publikasi No. 28. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

48. Pembuatan Limun. Publikasi No. 29. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

49. Pembuatan Abon. Publikasi No. 30. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

50. Pembuatan Gula Aren. Publikasi No. 31. Balai Besar Penelitian dan Pengembangan Industri Hasil Pertanian, Bogor. 1982. Indonesian.

Appendix VI

TABLE 1

DAFTAR INDUSTRI KECIL MAKANAN DAN
(SMALL-SCALE FOOD & BEVERAGE IND

NO. URUT	KOTAMADYA / KABUPATEN	JENIS																						
		KRUPUK	TAPE	TAPIOCA	SOUN	GAPLEK	KACANG ASIN	MINYAK KACANG	ONCOM	BIHUM	MIE	ROTI & KUE	ACI AREN	GULA AREN	GULA KELAPA	KOPRA	MINYAK KELAPA	TAUCO	KECAP	TEMPE	TAHU	BRONDONG	JAGUNG GILING
1	Kab. Bandung	45										3							3		6			
2	Kodya. Bandung	5					2	6			20	46							27	12	10		4	
3	Kab. Bekasi	29										4							7	2	57			
4	Kab. Bogor	9			5				4	9									5		87			
5	Kodya. Bogor							2			5	17					1		3	34	34			
6	Kab. Ciamis	31			1						11	17			5		14		13	3	12		7	
7	Kab. Cianjur	22					1					16	18	457				4	2		17			
8	Kab. Cirebon	75			48		7	14				45					1		21	200	15			
9	Kodya. Cirebon	12			20		7	1	1	1	9	10					1		15	20	3			
10	Kab. Garut	78				3		2		1	7	49	7				1		6	2	69			
11	Kab. Indramayu	3									2	6							14	13	67			
12	Kab. Karawang	34							2		2	16							9	6	32			
13	Kab. Kuningan	19					1					1					18		7	4	28			
14	Kab. Lebak	12										4									7			
15	Kab. Majalengka	53			1		1		60			7						1	34	138	239			
16	Kab. Pandeglang	14									1	5	10							2	11			
17	Kab. Purwakarta																		1	1	11			
18	Kab. Rangkas-bitung	18									2	3								52	7	2		
19	Kab. Serang	22			1							7					1		3	15	14	2		
20	Kab. Subang	47									7	2							3		46			
21	Kab. Sukabumi	31						4				55	32						1	2	12			
22	Kodya. Sukabumi	7		2			6	3			6	17							7					
23	Kab. Sumedang	50				2		12	6		2	4	1					1	2		37			
24	Kab. Tanggerang	19									1	5							1					
25	Kab. Tasikmalaya	23							5	3	3	22	6						8	5	23			
	TOTAL	658	-	2	76	5	25	44	78	14	78	361	74	457	5	-	37	6	192	511	844	4	11	

(+) Data diperoleh dari Kantor-Kantor Dinas Perindustrial D.T. II

N.A. = No Re

SECTION 1

DF/INS/76/001

LE

MAKANAN DAN MINUMAN DI JAWA (+) JAWA BARAT (WEST JAVA)
BEVERAGE INDUSTRIES IN JAVA)

I N D U S T R I

T A H U	BRONDONG	JAGUNG GILING	A B O N	DENDENG	IKAN ASIN	T E R A S I	P E T I S	GULA TEBU	S E L A I	KEMBANG GULA	M A N I S A N	JIPANG/JENANG/ DODOL	SALE PISANG	SARI BUAH	S I R O P	L I M U N	A N G G U R	C U K A	SUSU SEGAR	S A G U	HUN KWEE	G A R A M	E M P I N G	KOPI GILING	T E H	KEMBANG TAHU	E S	T O T A L
6																1					1	3					5	67
10		4		3						23	2			2	2	22	5	2	3			7		16	8		4	231
57														1	9	10		1						1				121
87																					1			1	1			122
34											28			1	1	6	1	2	2					25	1		9	172
12		7			3					4		6				8								1			26	162
17																1									144			682
15					40	40			2	10	7	4	2		13	5			1			5			3		5	563
3					80			5				2			3	3					2	2	100	4	6		8	315
69						2				1	1	29	3			3						1		9	78	3	5	360
67					17	3										9								1			41	176
32										1				1	10	13									1		9	136
28																											1	79
7																3								13				39
239										6					8	1												549
11															1	2							9360	4				9410
11																1												14
7	2															2								11			20	117
14	2														2	3							2245	4			6	2325
46										9		1				8								1			15	139
12					5						13										3	4			205			367
										6						1					1			4	6		3	69
37																					1	1					3	122
																						2					2	30
23										9		11				15					4	6		5				149
844	4	11	-	3	145	46	-	5	2	69	51	53	5	5	49	117	6	5	6	-	13	31	11705	100	453	3	162	16516

N.R. = No Response (tidak ada tanggapan)

SECTION 2

Appendix VI

[illegible]

NO. URUT	KOTAMADYA / KABUPATEN	JENIS																				
		KRUPUK	TAPE	TAPIOCA	SOUN	GAPLEK	KACANG ASIN	MINYAK KACANG	ONCOM	BIHUN	MIE	ROTI & KUE	ACI AREN	GULA AREN	GULA KELAPA	KOPRA	MINYAK KELAPA	TAUCO	KECAP	TEMPE	TAHU	BROMOCO[illegible]
1	Kab. Banjarnegara	6			1							2	1		7		1		4	1	9	
2	Kab. Banyumas	10		5	17		1			1	30	26				8	7		5	28	150	
3	Kab. Batang	20		130							15	10		45					1	10	20	
4	Kab. Blora						N	R														
5	Kab. Boyolali	8	725								1	7								1650	14	
6	Kab. Brebes	48			13		1	3			1	10					3		9	850	7	5
7	Kab. Cilacap	14		6							2	8	1		18		5		5	64	26	
8	Kab. Demak	50									1	3							2	52	3	
9	Kab. Grobogan	10	1		1							10							8	1	20	
10	Kab. Jepara											39					1		3	17	20	
11	Kab. Kebumen	2													50				7	8	7	
12	Kab. Kendal	55		7							1	17			19					21	44	
13	Kab. Klaten	279		1	65			10			10	15	5						2	300	111	
14	Kab. Kudus	33					9					17							23	33	41	
15	Kab. Magelang	39	1	2				1		4	4	8	11		506					166	101	
16	Kodya. Magelang	35									11	38							4		29	
17	Kab. Pati	14										8							11	68	28	
18	Kab. Pekalongan						N	R														
19	Kodya. Pekalongan	7										6						3	3		3	
20	Kab. Probolinggo	3					1				3	5			13	9	12		5	654	136	
21	Kab. Purworejo	64					4				2	17			5806	16	87		5	29	11	
22	Kab. Rembang	109		25								17		498					7	56	2	
23	Kab. Semarang	15					1					6			1						22	
24	Kodya. Semarang						N	R														
25	Kab. Sragen	64													160					196	44	
26	Kab. Sukoharjo	151					1	5		8	3	14							1	189	62	
27	Kodya. Surakarta	5																	1	1	9	
28	Kab. Tegal	21			1					3	1								3		19	
29	Kab. Temanggung	12		4								11	1	18					4	10	56	
30	Kab. Wonogiri																		2		104	
31	Kab. Wonosobo	27											26			6			2		58	
	TOTAL	1101	727	180	98	-	18	19	-	16	85	294	45	561	6580	39	116	3	117	4404	1156	5

(+) Data diperoleh dari Kantor-Kantor Dinas Perindustrian D.T. II

N.R. = No

SECTION 1

JAWA TENGAH (CENTRAL JAVA)

	BROKEN RICE	JAGUNG GILING	ABON	DENDENG	IKAN ASIN	TERASI	PETIS	GULA TEBU	SELAI	KEMBANG GULA	MANISAN	UYANG/JAMANG/KOOL	SALE PISANG	SARI BUAH	SIROP	LIMUN	ANGGUR	CUKA	SUSU SEGAR	SAGU	HUN KWEE	GARAM	EMPTING	KOPI GILING	TEH	KEMBANG TAHU	ES	TOTAL
9								1				1												1	3		9	47
50						1									1	1			2					2	114		15	424
20					52												1								3		6	313
		N R															N	R										-
4			8														2						2				6	2423
7	5				15	9																226			5		10	1215
26					1								1									1		3	1		12	168
3						1													1									113
20															1													52
20															1													81
7														3		1												78
44					15	19		1				1					2		1					7			8	218
11												2			1						2						20	823
41												11		1	7	1	3							8			26	213
01					833							2													1		6	1685
29										3		1							4					3			15	143
28					39	8								5	3	9					1	10					204
		N R															N	R										-
3																2												24
136										1				4		4								1			10	861
11														3		1			4		1			4			13	6067
2					313	14	5							4	3	3	2					687					2	1747
22												11			1									1			4	52
		N R															N	R										-
44																												464
12						1				1		1				1	32			1							9	480
9																1												17
19																3	2		4								20	77
56																			3					1			4	124
04																												106
58				3															2						1		9	134
56	5	-	8	3	1268	53	5	2	-	5	-	20	1	20	18	27	44	-	21	1	4	924	2	31	128	-	204	18353

. = No Response (tidak ada tanggapan)

SECTION 2

Appendix VI

TABLE 3

DAFTAR INDUSTRI KECIL MAKANAN
(SMALL-SCALE FOOD & BEVERAGE

NO. URUT	KOTAMADYA / KABUPATEN	JENIS IN																						
		KRUPUK	TAPE	TAPIOCA	SOUN	GAPLEK	KACANG ASIN	MINYAK KACANG	OPCOM	BIHUN	MIE	ROTI & KUE	ACI AREN	GULA AREN	GULA KELAPA	KOPRA	MINYAK KELAPA	TAUCO	KECAP	TEMPE	TAHU	BRONDONG	JAGUNG GILING
1	Kabupaten Bantul	91								7		23							4	1966	51		
2	Kabupaten Gunung kidul	5																		4	5		
3	Kabupaten Kulon Progo	3																		120	5		
4	Kabupaten Sleman	4																		258	25		
5	Kotamadya Yogyakarta	18																	6	2	1		
	TOTAL	121								7		23							10	2350	87		

(+) Data diperoleh dari Kantor-Kantor Dinas Perindustrian D.I. Yogyakarta

SECTION 1

TABLE 3 [illegible]/INS/76/001

[illegible] KECIL MAKANAN DAN MINUMAN DI JAWA (+) D.I. YOGYAKARTA

[illegible] & BEVERAGE INDUSTRIES IN JAVA)

I N D U S T R I

[illegible]	T A H U	BRONDONG	JAGUNG GILING	A B O N	DENDENG	IKAN ASIN	TERASI	P E T I S	GULA TEBU	S E L A I	KEMBANG GULA	MANISAN	JIPANG/JENANG/DODOL	SALE PISANG	SARI BUAH	S I R O P	L I M U N	A N G G U R	C U K A	SUSU SEGAR	S A G U	HUN KWEE	G A R A M	E M P I N G	KOPI GILING	T E H	KEMBANG TAHU	E S	T O T A L
56	51				5										2													5	2154
4	5																												14
0	5																												128
8	25																												287
2	1															2	4	3								1			37
50	87				5										2	2	4	3								1		5	2620

SECTION 2

TABLE

DAFTAR INDUSTRI KECIL MAK-

(SMALL-SCALE FOOD & BEVER-

SECTION 1

NO. URUT	KOTAMADYA / KABUPATEN	J E N I S I N: KRUPUK	TAPE	TAPIOCA	SOUN	GAPLEK	KACANG ASIN	MINYAK KACANG	ONCOM	BIHUN	MIE	ROTI & KUE	ACI AREN	GULA AREN	GULA KELAPA	KOPRA	MINYAK KELAPA	TAUCO	KECAP	TEMPE	TAHU	BRONDONG
1	Kab. Bangkalan											3							5		4	
2	Kab. Banyuwangi									N	R											
3	Kodya. Blitar	21				4		9			7	14				18	9		9	39	5	1
4	Kab. Blitar	86	96	185						1	1	13	2		8148	7	100		22	848	208	3
5	Kab. Bojonegoro	4										6							4	5	4	
6	Kab. Bondowoso	55	219	1						1	2	5						.		148	76	
7	Kab. Gresik									N	R											
8	Kab. Jember									N	R											
9	Kab. Jombang																				10	
10	Kab. Kediri																		17		25	
11	Kab. Lamongan									N	R											
12	Kab. Lumajang									N	R											
13	Kab. Madiun	7			1	1					1									847	6	
14	Kodya. Madiun	14									14	9					1		9	151	7	1
15	Kab. Magetan									N	R											
16	Kab. Malang																					
17	Kodya. Malang																					
18	Kab. Mojokerto									N	R											
19	Kodya. Mojokerto									N	R											
20	Kab. Nganjuk	17																		548	362	
21	Kab. Ngawi					1					1	3							2	1	41	
22	Kab. Pacitan	138						3				7			9363	77	578		4	1034	12	
23	Kab. Pamekasan	3										4							3		2	
24	Kab. Pasuruan									N	R											
25	Kodya. Pasuruan									N	R											
26	Kab. Ponorogo	7					1				1	1							4	1658	61	
27	Kab. Probolinggo									N	R											
28	Kodya. Probolinggo									N	R											
29	Kab. Sampang	2																	2		1	
30	Kab. Sidoarjo	105			1					4	30	12					2		5		9	
31	Kab. Situbondo	7									6	3							3	7	15	
32	Kab. Sumenep																		[illegible]			
33	Kab. Surabaya									N	R											
34	Kodya. Surabaya	6									2	15								326	2	1
35	Kab. Trenggalek									N	R											
36	Kab. Tuban																		5	9	12	
37	Kab. Tulungagung	6					3				9						4		6		2	2
	TOTAL	478	315	186	2	6	4	12	-	6	74	95	2	-	17511	102	694	1	108	5621	864	8

(+) Data diperoleh dari Kantor-Kantor Dinas Perindustrian D.T. II

N.R. = No Re-

TABEL .

HASIL MAKANAN & MINUMAN DI JAWA
& BEVERAGE INDUSTRIES IN JAVA

JAWA TIMUR (EAST JAVA)

I N D U S T R I

TAHU	BREKDENG	JAGUNG GILING	ABON	DENDENG	IKAN ASIN	TERASI	PETIS	GULA TEBU	SELAI	KEMBANG GULA	MANISAN	JIPANG / JENANG, DODOL	SALE PISANG	SARI BUAH	SIROP	LIMUN	ANGGUR	CUKA	SUSU SEGAR	SAGU	HUN KWEE	GARAM	EMPING	KOPI GILING	TEH	KEMBANG TAHU	ES	TOTAL
4																11												23
		N	R										N	R														-
5	1	4	2	1								1				5	2		4				1	6			1	183
208	3	3						3		4						2			1					2			2	9765
4																6											15	44
76										1						2					1			5			17	534
		N	R										N	R														-
		N	R										N	R														-
10																3												13
25																17												59
		N	R										N	R														-
		N	R										N	R														-
6								4			6					1											6	800
7	1															8	2							1			18	235
		N	R										N	R														-
														1	1	2	4											8
															2	5	7											14
		N	R										N	R														-
		N	R										N	R														-
362								5								2	5										2	941
41																1	4								1		12	67
12					23	14			30																			11283
2																	5											17
		N	R										N	R														-
		N	R										N	R														-
61												1			1												19	1754
		N	R										N	R														-
		N	R										N	R														-
1																3						1					6	15
9			1			2	4			9				1	2	22						4		4			3	220
15		4			3											2						1					7	58
																5												13
		N	R										N	R														-
2	1						8								1	5	4							2			4	37
		N	R										N	R														-
2																4												30
2	2									4						5	1	1						1			17	61
864	8	11	3	1	26	16	12	50	30	18	6	2	-	2	7	111	34	1	5	-	1	6	1	31	1	-	139	26603

N.R. = No Response (tidak ada tanggapan)

SECTION 2

2	JAWA TENGAH	1101	727	180	98		18	19		16	85	294	45	561	6580	39	116	3	117	4404	1156	5				
3	D.I.YOGYAKARTA	121								7		23							10	2350	37					
4	JAWA TIMUR	478	315	186	2	6	4	12		6	74	95	2		17511	102	694	1	108	5621	864	3	11			
	TOTAL	2358	1042	368	176	11	47	75	78	43	237	773	121	1018	24096	141	847	10	427	12886	2951	17	22			

(+) Except D.K.I. Jakarta

SECTION 1

Appendix VI

TABLE 5

DAFTAR INDUSTRI KECIL MAKANAN

(SMALL-SCALE FOOD & BEVERAGE I

NO. URUT	PROPINSI	KRUPUK	TAPE	TAPIOCA	SOUN	GAPLEK	KACANG ASIN	MINYAK KACANG	ONCOM	BIHUN	MIE	ROTI & KUE	ACI AREN	GULA AREN	GULA KELAPA	KOPRA	MINYAK KELAPA	TAUCO	KECAP	TEMPE	TAHU	BRONDONG	JAGUNG GILING
1	JAWA BARAT	658		2	76	5	25	44	78	14	78	361	74	457	5		37	6	192	511	844	4	11

6	5		8	3	1268	53	5	2		5		20	1	20	18	27	44		21	1	4	924	2	31	128		204	18.353
7				5										2	2	4	3								1		5	2.620
4	3	11	3	1	26	16	12	50	30	18	6	2		2	7	111	34	1	5		1	6	1	31	1		139	26.603
51	17	22	11	12	1439	115	17	57	32	92	57	75	6	29	76	259	87	6	32	1	18	961	11708	162	583	3	510	64092

SECTION 2

DP/INS/76/001

LE 5

MAKANAN DAN MINUMAN DI JAWA (+)

EVERAGE INDUSTRIES IN JAVA)

	I N D U S T R I																											
	BRONDONG	JAGUNG GILING	A B O N	DENDENG	IKAN ASIN	TERASI	P E T I S	GULA TEBU	S E L A I	KEMBANG GULA	MANISAN	JIPANG / JENANG DODOL	SALE PISANG	SARI BUAH	S I R O P	L I M U N	A N G G U R	C U K A	SUSU SEGAR	S A G U	HUN KWEE	G A R A M	E M P I N G	KOPI GILING	T E H	KEMBANG TAHU	E S	T O T A L
44	4	11		3	145	46		5	2	69	51	53	5	5	49	117	6	5	6		13	31	11705	100	453	3	162	16.516

Appendix VII

TRAINING COURSES, SEMINARS, WORKSHOPS CONDUCTED

Activity	Duration (Days)	Dates	Participants
1. Food Technology Seminar IV - Indonesian Association of Food Technologists: attended by persons from food industry, universities, institutes and Government	2	5/1979	120
2. Extension Services for the Small-Scale Food Industries- Paper presented at the Food Technology Seminar IV	1	5/1979	120
3. Training Course in Food Processing for School Supervisors, Department of Education (from all over Indonesia)	6	10/1980	40
4. Training Course in Food Processing for small-scale food industry entrepreneurs from East Java and East Nusatenggara	40	11-12/1980	5
5. Training Course in Food Processing for an Extension Worker, Department of Industry, North Sumatra	60	11/1980 - 1/1981	1
6. Making of Aren Sugar - training course conducted for producers of aren sugar in Desa Blitar, Bengkulu	5	12/1980 - 1/1981	25
7. Making of Bakery Products - training course for IRDABI staffmembers, arranged in collaboration with Unilever Indonesia	3	1/1981	11

8. Salting and Drying of Fish - training course conducted for fishermen of Desa Sumur in Kabupaten Pandeglang, West Java	7	5/1981	9c
9. Production of Superior Quality Copra - training course conducted for farmers of Kabupaten Pandeglang, West Java	14	5-6/1981	50
10. Characteristics of a Research Worker - seminar given at IRDABI	1	6/1981	35
11. Workshop on Small-Scale Food Industries in Indonesia - attended by persons from food industry, universities, institutes and Government	2	6/1981	152
12. Status of Small-Scale Food Industries in Indonesia - paper presented at the Workshop on Small-Scale Food Industries in Indonesia	1	6/1981	152
13. Instrumental Analysis and General Food Analysis - training course, for IRDABI staffmembers, arranged at IRDABI in collaboration with Tropical Products Institute, London	60	8-10/1981	7
14. Fish Processing - training course arranged for fishermen of Kabupaten Tanjung Gabung, Jambi	11	10/1981	20
15. Processing of Pine-apple and Preserving Eggs - training course arranged for farmers of Kabupaten Batanghari, Jambi	13	11/1981	18
16. Food Products Manufacturing - training course conducted for BIPIK's Extension Officers (TPLs) arranged at IRDABI	30	11-12/1981	32

17. Food Processing - training course for one BIPIK Extension Officer (TPL) from North Sumatra	30	12/1981	1
18. Principles of Food Processing - training course conducted for the IRDABI staffmembers	19	1-2/1982	14
19. Tahu Manufacturing - training course conducted for tahu producers of Parung, Kabupaten Bogor, West Java	4	3/1982	34
20. Production of Processed Food Products - training course arranged for Small-Scale Food and Essential Oil Producers from Palangkaraya, Central Kalimantan	7	3-4/1982	11
21. Manufacturing of Fish Products - training course in salting and drying of fish, and preparation of fermented fish products arranged for small-scale food industry entrepreneurs of Kabupaten Kuala Tungkal, Jambi	7	8/1982	23
22. Operation and Maintenance of Food Processing Machinery - training course, for IRDABI staffmembers, conducted at IRDABI in collaboration with Metal Box Engineering of U.K.	4	9/1982	32

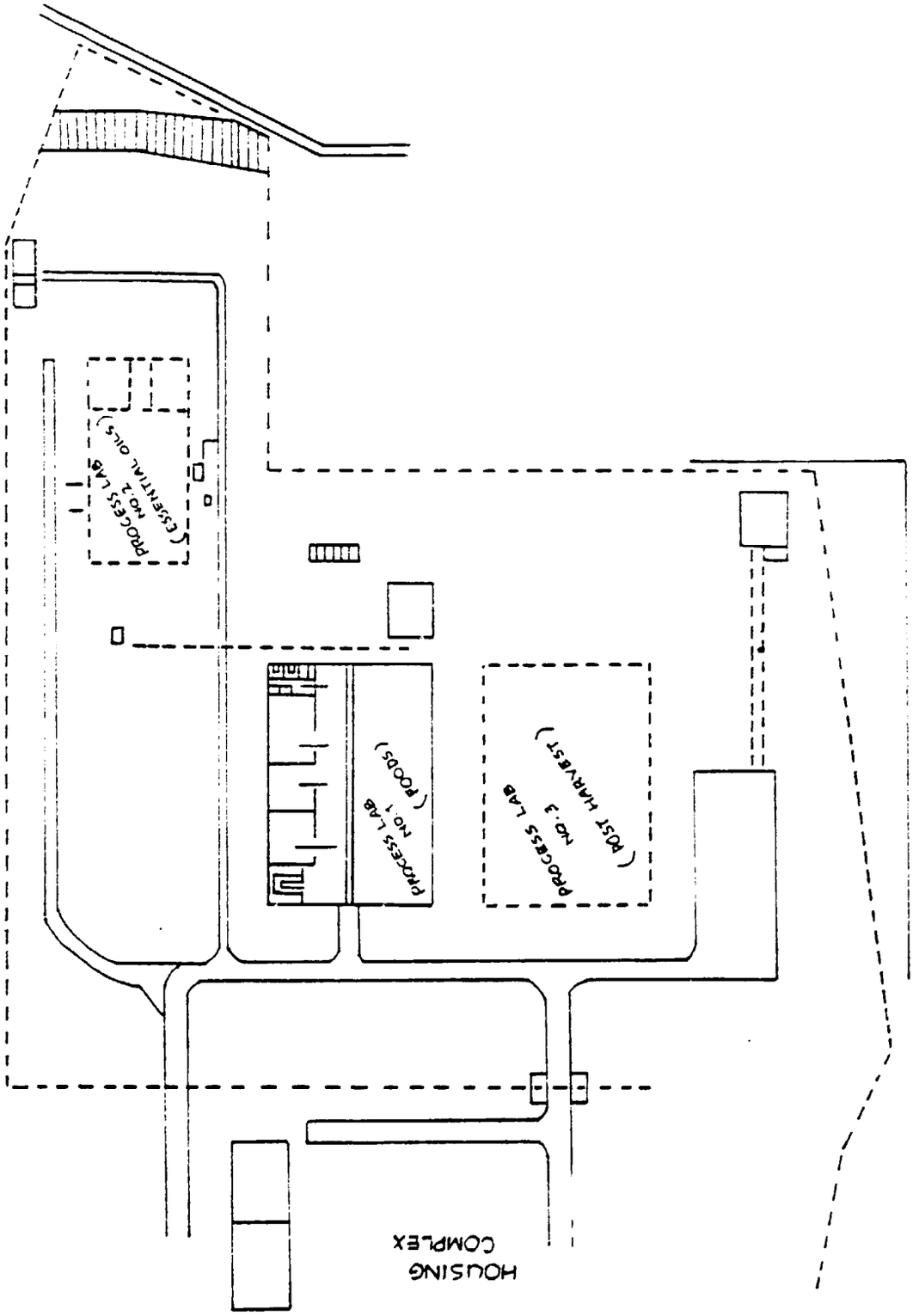


Figure V. FOOD PROCESSING LABORATORY - GENERAL LOCATION

GROUND FLOOR

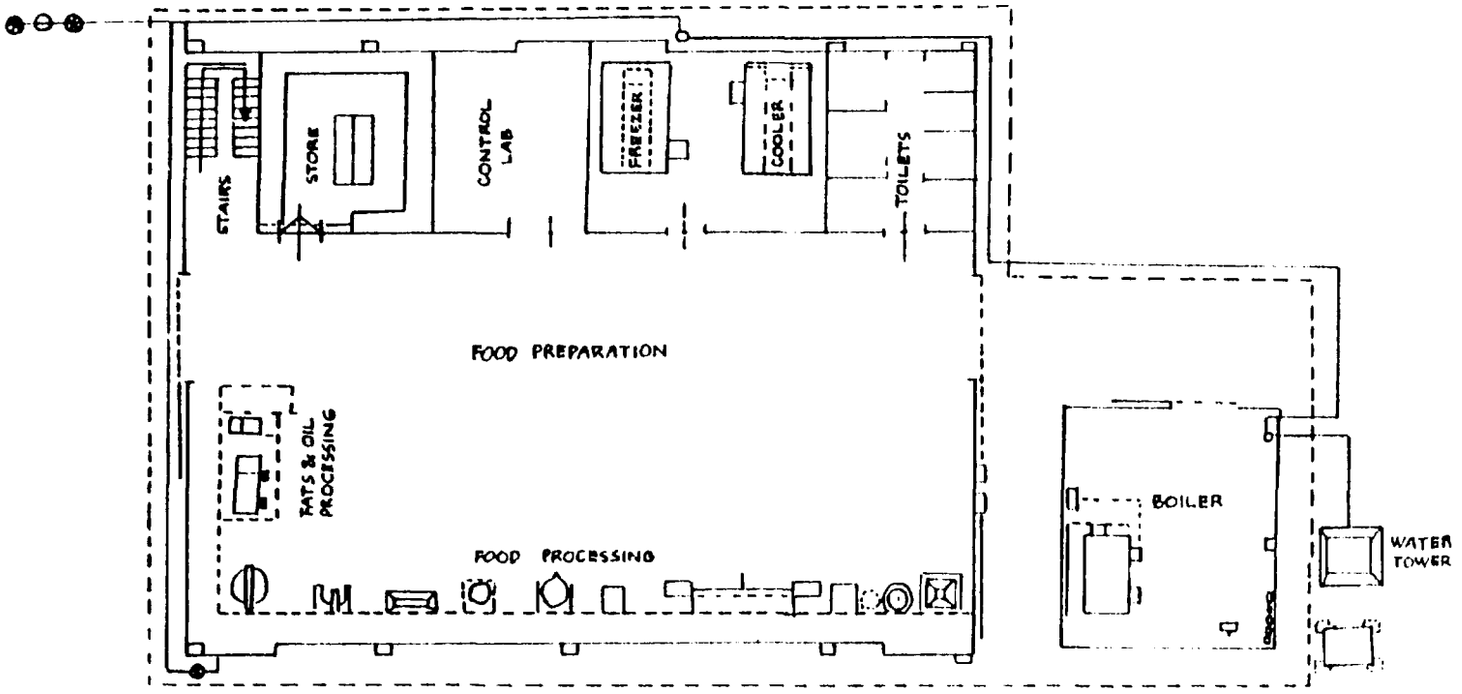


Figure VI. FOOD PROCESSING LABORATORY

CIKARET / BOGOR

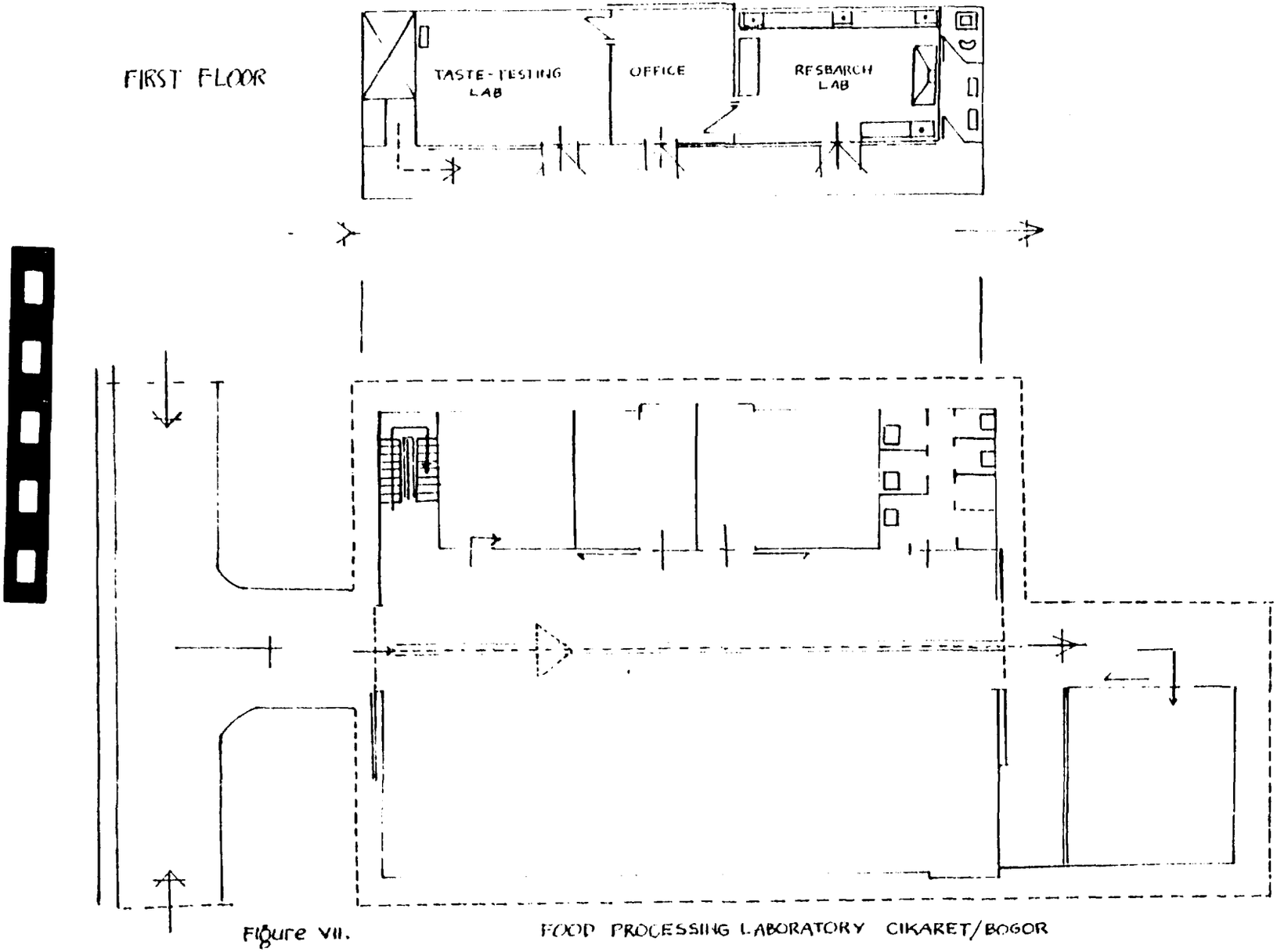


Figure VII. FOOD PROCESSING LABORATORY CIKARET/BOGOR

23.09.13