

第 4 章 評価に基づく勧告

1981年7月、AP-4計画2年延長に先立ち行なわれた評価時には、やつと豆腐、茶、製めんラインが稼動し、実験室が活動を開始した状態であったから、2年延長は本計画の完成のために不可欠であった。今回の評価時に、この2年間で如何に充実したものであったかは、製造ラインの改造、改善を含めた完成、各ラインの運転操作マニュアルの完成、実験室での学位プログラムの開始等に明確に見ることができた。1981年には、日本人専門家からはカウンタパートが製造法やラインを運転する方法を学ぶ熱意に欠けているとか、AP-4プロジェクトに身や時間の入れ方が足りない等の不満が聞かれ、カウンタパート側からは日本人専門家は実験室に閉じ込めり、カウンタパートと交ってくれない等の不満が聞かれた。今回、Dr.amanから食用油の抽出、製精装置に日本人専門家が種々加えた技術的改良のみでなく、その努力を大変多として、そのことを評価文書に書き込んで欲しいと申し出た時に、AP-4計画のカウンタパートから始めて日本人専門家の努力を認め、感謝する意向をくみ取ることができて、大変に喜しく感じた。

結論的には、1981年評価時にインドネシア側から示されたカウンタパート側が最も重荷としているパイロットプラントのフル操作の達成に、よき日本人専門家を得て、よき指導が得られたこと、同時に実験室を中心とする学位プログラムが成果を生みつつあること、この両者が相乗して最後の2年間にローイ間に信頼関係を生むという協力事業の真の目的を達成したものである。

プラントの運転そのものは2名の技官と補助者を1~2名付けることで可能であると、日本人専門家の川合氏は見ている。現在の14名の技官を大幅に削減できる。このことは予算上も有利となる。

各ラインのヘッドは、それぞれS0、S1の学生を指導するだけの技術を身につけているものと判断される。マニュアルの完成も間近い。従って各ライン関係の引き継ぎは、定期的な注油、空運転等の保守管理手続を文書化し、プラントマネージャが技官を指導してこの手続きを忠実に実行し、故障等早目に修理することをうたえば十分であると判断した。それ故にこのことを勧告の第1とした。

AP-4施設を見てすぐ気付くことは、米加工ライン(塵発生のためパイロットプラントとは別棟)と貯蔵実験室の両者は完全にDr.Kamaruddinが掌握、活用していることである。彼はこれらを学位プログラム、修士プログラム、卒論指導に駆使している。またこれら2つの部門では機器もよく整頓され、学生もよく仕事をしている。これは無理からぬことで、Dr.Kamaruddinは日本で教育を受けたがために、これらの機器を熟知しており、難なく使いこなすことが出来る。しかし他の実験室はどうなるであろうか。現在日本人専門家の手中にあり、

学位プログラム中の研究者と、修士プログラムの学生が出入りしているに止まり、FATETA学部のスタッフがここで積極的に仕事を進めている様子はなかった。Kamaruddin 氏の如き人がそれぞれ品質実験室と醸造食品実験室の責任者として出てきて、これらの実験室を引き継ぎ、そして運営してくれることを強く希望している。

第2に予算獲得に一層の努力をするよう勧告した。既に述べたようにDr. f. Pramoetadiがこの項に関心を示してくれている。各方面に働きかけ、AP-4施設が過去2年間に大いに教育、研究に活用されたように、引き継いで使用されるよう、必要資金が獲得されることを切望する。

第3項は上記2項を受けついで、AP-4計画のそもそもの目的、すなわち(1)農産物の有効利用、(2)栄養改善、(3)農村工業の振興を推進し、そのためにAP-4施設が今後FATETA学部の施設として一層活潑に利用されるよう、必要なアフタケアを日本側が提供することを勧告したものである。そのアフタケアはスベヤパワの必要等、現地のみでの努力で対応出来ない事態が生じたときに手をさし伸べて欲しいという内容である。本計画がインドネシア側に移った後にも大いに本計画の本来の目的を追求して行けるよう、日本政府のアフタケアを切望して止まない。

4-1 当初計画と投入実績との違い

各項目別にその内容について評価してきた通り、当初計画はほぼ計画通り、否計画以上に人も物も投入されてきた。AP-4施設のパイロットプラントは国公立の別なく日本のどの大学にも見られない程充実した設備を持ち、支援実験室は合せて3講座分にゆうに匹敵する設備、機器を備えるに到った。そしてFATETA学部が引続いてAP-4施設を教育、研究に活用できるだけの技術移転も十分になされたものと判断し、P14の総合評価表には一点を除きすべてAとした。

Bとなった項目は現在進行中の学位プログラムに関してである。1名が既に学位を取得したが、残る3名が何れもここ1年以内に学位論文提出可能な所まできている。これら3名の学位プログラムはAP-4施設の研究から生れたが故に、AP-4計画中に終了してこの計画の成果たるべきであり、その完成を期待する意味でBとすべしとの意見が評価チームのインドネシア側メンバーから出された。それももつとものことと思われ、この項をBとした。

参 考 资 料


THE RECORD OF DISCUSSION BETWEEN THE JAPANESE PROGRAMMING
TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF INDONESIA CONCERNING TECHNICAL COOPERATION
FOR THE AGRICULTURAL PRODUCTS PROCESSING PILOT PLANT
PROJECT, IPB, JTA - 9(a) (8)

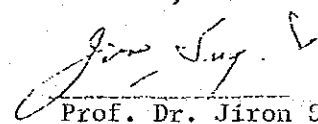
Following on the Implementation Survey conducted in June 1977, the Japanese Programming Team (hereinafter referred to as the 'Team'), organized by the Japanese International Cooperation Agency (hereinafter referred to as 'JICA') and headed by Prof. Dr. Jiro SUGI, visited Indonesia from 9th to 16th October, 1977, for the purpose of working out details of the implementation of the technical cooperation between Japan and Indonesia for the Project of the Agricultural Products Processing Pilot Plant to be affiliated to the Faculty of Agricultural Engineering and Products Technology (herein-after referred to as 'FATEMETA') of the Bogor Agricultural University (Institut Pertanian Bogor, hereinafter referred to as 'IPB').

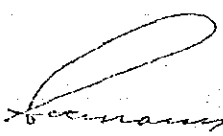
During their stay in Indonesia, the Team exchanged views and had a series of discussions with the authorities concerned of the Government of Indonesia concerning the desirable measures to be taken by both Governments for the successful implementation of the Project.

As a result of the discussions, the Team and the Indonesian authorities concerned agreed to recommend to their respective Governments the matters referred to in the Document attached hereto.

Jakarta, October 14, 1977.


Prof. Dr. Ir. A.M. SATARI
Rector, Bogor Agricultural
University


Prof. Dr. Jiron SUGI
Head of the Japanese
Programming Team


Prof. Dr. Samaun SAMADIKUN
Director for Academic Affairs,
Directorate-General for Higher Education,
Ministry of Education and Culture

THE ATTACHED DOCUMENT

1. The Project of the Agricultural Products Processing Pilot Plant (hereinafter referred to as the 'Project') aims at promoting and upgrading the techniques of agricultural products processing in line with the national targets of Indonesia and at increasing the capacity of the leading personnel involved in this particular field by establishing a Pilot Plant with proper facilities to be affiliated to the FATEMETA, IPB, for the technical training of the Faculty staff, students as well as the teachers of technical and vocational schools and for the development of processing techniques.

This project will be implemented through close cooperation between the Government of Japan and the Government of the Republic of Indonesia.

Activities of the Project can be broken down as follows:

- (1) Establishment and management of the Pilot Plant;
 - (2) Upgrading the facilities and relevant function of those existing laboratories and research rooms;
 - (3) Reorganization of the experiment and practical training programmes on e.g. quality control of processed agricultural products;
 - (4) Training for the FATEMETA staff, students and the technical and vocational school teachers engaged in agricultural products processing;
 - (5) Other activities necessary for the improvement and development of techniques related to agricultural products processing.
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2. (1) Taking into consideration on the importance of the promotion of agricultural products processing technology in Indonesia, the functional demarcation with the Food Technology Development Centre (FTDC) which will be attached to the IPB, and to encourage current and future demands for training and research of FATEMETA as well as technical and vocational schools, the Project will primarily deal with the following processing lines and facilities.
 - i. Essential oil, edible oil production and their waste utilization
 - ii. Estate crops processing (tea and brown sugar)
 - iii. Cereal and tuber processing and their waste utilization
 - iv. Fermented agricultural products

v. Storage facilities

vi. Supportive facilities e.g. laboratory for quality control and workshop

(2) The Project will be implemented in accordance with an operational work an operational work plan to be formulated by the Joint Committee referred to in 10.

3. (1) In accordance with laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense the services of a leader, experts in agricultural products processing technology and related fields and a coordinator or liaison officer (hereinafter referred to as 'Japanese experts') through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

(2) The Japanese experts referred to in (1) above and their families will be granted in Indonesia the privileges, exemptions and benefits as listed in Annex I and will be granted privileges, exemptions and benefits no less favourable than those granted to the experts of the third countries working in Indonesia under the Colombo Plan Technical Cooperation Scheme.

4. (1) In accordance with laws and regulations in force in Japan, the Government of Japan will also take necessary measures through JICA to provide at its own expense such equipment, machinery, vehicles, instruments, tools, their spare parts and other materials required for the implementation of the Project as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.

(2) The articles referred to in (1) above will become the property of the Government of the Republic of Indonesia upon being delivered c.i.f. to the Indonesian authorities concerned at the sea-and/or air-port of disembarkation and will be utilized exclusively for the implementation of the Project in consultation with the Japanese Team Leader referred to in 3 (1).

5. (1) In accordance with laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive the Indonesian personnel associated with the Project for technical training or for observational studies in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
- (2) The Indonesian authorities concerned will take necessary measures to ensure that the knowledge and experience acquired by Indonesian personnel mentioned in (1) above through technical training and observational studies in Japan will be utilized effectively for the implementation of the Project.
6. The Indonesian authorities concerned will take necessary measures to provide at their own expense:
 - (1) Services of the Indonesian counterparts and other personnel as listed in Annex III;
 - (2) Necessary working space for experts and accommodation for incoming equipment, machinery, vehicles and tools referred to in 4 (1) before installation;
 - (3) Following land and buildings necessary for the implementation of the Project:
 - i. Pilot Plant and its incidental facilities
 - ii. Office
 - iii. Garage and others
 - (4) Supply or replacement of equipment, machinery, vehicles, tools, their spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under 4 (1);
 - (5) Suitably furnished housing facilities for the Japanese experts and their families.
7. The Indonesian authorities concerned will take necessary measures to meet:
 - (1) Customs duties, internal taxes and any other charges, if any, imposed in Indonesia in respect of the articles referred to in 4 (1);

- (2) Expenses necessary for transportation of the articles referred to in 4 (1) within Indonesia as well as for installation, operation and maintenance thereof;
 - (3) All running expenses necessary for the implementation of the Project;
 - (4) Expenses for transportation facilities and internal travel in Indonesia of the Japanese experts on duty.
8. The Indonesian authorities concerned undertake to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with, the discharge of their official functions in Indonesia except for those claims arising from willful misconduct or gross negligence of the Japanese experts.
9. The Rector of Bogor Agricultural University will be responsible for the administration and implementation of the Project, and the Japanese experts will provide primarily technical advice and guidance for the implementation of the Project.
10. For the successful implementation of the Project, a Joint Committee will be established with the members as listed in Annex IV.
- The Committee will meet regularly.
- The function of the Committee is as follows.
- (1) Formulation of annual operational work plan of the Project
 - (2) Examination of draft local budget necessary for the Project
 - (3) Staffing of the Project
 - (4) Publication of operation and safety codes for the utilization of instruments and equipment for the Project
 - (5) Setting up working committees at IPB which will execute the implementation of the Project and their management
 - (6) Others
11. The two Governments will consult each other in respect of any major issues that may arise from or in connection with this Attached Document.

12. This Project will be envisaged for a period of 5 (five years). This Attached Document will serve as a basis for the implementation of this five-year Project.

The duration of the operation under this Attached Document will be 2 (two) years, effective from the date of signature.

There shall be mutual consultation between the two Government within this period of two years concerning the technical cooperation thereafter.

ANNEX I

PRIVILEGES, EXEMPTIONS AND BENEFITS

1. Exemption from income tax and charges of any kind imposed on or in connection with the living allowances remitted from abroad;
2. Exemption from import and export duties and any other charges imposed in respect of personal and household effects which may be brought into Indonesia from abroad;
3. Free medical services and facilities to the Japanese experts and their families in accordance with the regulation applied to Indonesian Government officials.

ANNEX II

ARTICLES TO BE PROVIDED BY THE GOVERNMENT OF JAPAN

1. Equipment and materials necessary for experiment and studies including audio-visual aid
2. Laboratory equipment and materials
3. Processing machinery for essential oil and edible oil production and accessories
4. Vehicles
5. Other necessary equipment and materials to be mutually agreed upon for the effective implementation of the Project.

ANNEX III

INDONESIAN COUNTERPARTS AND OTHER PERSONNEL

1. Project Head
2. Pilot Plant Superintendent and Staff-in-charge of Training
3. Clerical and services employees
4. Labourers

ANNEX IV

COMPOSITION OF THE JOINT COMMITTEE

Chairman : Rector of IPB

Secretary-General : Dean of FATEMETA, IPB.

Members : Director for Academic Affairs,
Directorate-General for Higher Education,
Ministry of Education and Culture

Director for Technical and Vocational Education,
Directorate-General for Primary and Secondary Education,
Ministry of Education and Culture

Head, Bureau for International Cooperation,
Ministry of Education and Culture

Director in charge of Development, IPB

Head, Department of Agricultural Products Processing
Technology, FATEMETA, IPB

Head, Department of Agricultural Engineering,
FATEMETA, IPB

Project Head

Leader of Japanese experts

Coordinator

- Note:
1. An official of the Embassy of Japan, a member of the Jakarta office of JICA and other related person(s) recognized necessary by the Chairman will be able to attend the Joint Committee meeting as observer.
 2. The Chairman may call responsible person(s) of other related organization as reporter and/or commentator on the major issues.

EXPLANATORY NOTES FOR THE TECHNICAL COOPERATION ON AGRICULTURAL
PRODUCTS PROCESSING PILOT PLANT PROJECT, IPB, JTA-9(a)(8)

The plan for Technical Cooperation Project on the Agricultural Products Processing Pilot Plant, IPB, was realized under the Record of Discussions (the RD) mutually signed by the representatives of both the parties: Prof. Dr. Ir. A.M. SATARI, Rector of the Bogor Agricultural University and Prof. Dr. Jiro SUGI, Head of the Japanese Agricultural Programming Team, Japan International Cooperation Agency.

The following details were discussed for the implementation of the Project effectively.

1. Operational working plan

The Technical Cooperation will be performed, in principle, in accordance with the provision of the RD.

The operational working plan for this project will be formulated by the Joint Committee.

Provisional operational working plan including training programme was discussed and attached hereto.

2. Housing facilities for the Japanese experts

The Guest House of the IPB will be made available for the Japanese short-term experts.

When the Japanese experts stay in a private house, the IPB will assist in housing arrangement. Expenses and facilities of such housing should meet the JICA standard.

3. Travel expenses for the Japanese experts

In principle, the IPB has agreed upon that the domestic travel expenses for the Japanese experts on duty will be borne by the IPB within its budgetary limitation.

Due consideration will be given to allocate the sufficient budget.

4. Setting up working committees at IPB

For the sake of successful implementation of the Project, in setting up working committees, consultation will be made between Rector of the IPB and Leader of the JICA expert team.

Operational work plan for IPB, April, Products Processing Pilot Plant Project

Fiscal Year Calendar Year	'77			'78			'79			'80			'81			'82			Remarks	
	4	7	10	1	4	7	10	1	4	7	10	1	4	7	10	1	4	7		10
Phasing of Cooperation				I (R/D)				II (R/D)				III				IV			V	
1. Major Activities																				
1) Construction/lines setting																				
2) Upgrading experiments																				
3) Innovative actions																				
4) Training																				
2. Inputs from Indonesia																				
1) Design of Plant																				
2) Construction of Plant																				
3) Staffing of Project																				
3. Japanese experts																				
1) Short-term experts																				
i. Design & installation																				
ii. By suspect																				
2) Long-term experts																				
i. Leader																				
ii. Others																				
4. Fellowships																				
5. Teams																				
1) Programming guidance																				
2) Evaluation																				
6. Provision of equipment																				
1) Procurement																				
2) Unloading																				

Inclusive of incidental facilities

When necessity arises
Up to Joint Committee
2-3 persons/year
Not more than four

2-3 fellowships/year

To determine co-operation thereafter

PROJECTED AP4 ACTIVITIES

S U B J E C T	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.
	1	2	3	4	1	2	3	4	1	2	3	4
Essential												
Estate Crop												
Cereal and Tubers												
Storage												
Quality Control												
Fermented Food												

Note:

- 1) ----- : Undergraduate students
 ===== : Vocational School Teacher Training
 xxxxxxxxxxx : Training for industrial personnels and other university students
 blank : IPB students practical training and maintenance
- 2) School starts the 3rd week of February.

2. (討議議事録対訳)

ボゴール農科大学農産加工パイロットプラント
プロジェクト, J T A - 9 (a) (8) に対する技術協
力に関する日本国計画打合せチームとインドネ
シア政府関係当局間における討議議事録

1977年6月の実施調査ののちに国際協力事業団(以下JICA)によって組織され, 杉二郎を団長とする日本国計画打合せチームは(以下チームという)ボゴール農科大学(以下IPBという)農業工学・農産加工学部(以下FAT E M E T Aという)に付属する農産加工パイロットプラントプロジェクトに関し, 日本国とインドネシア国との間の具体的な技術協力の内容を検討するため, 1977年10月9日から10月16日までインドネシアを訪問した。

インドネシアに滞在中, 同チームはプロジェクトを成功裡に実施するため両国政府により実施されるべき諸事項につき, インドネシア政府関係当局と数回に亘り, 意見を交換した。

その結果, チームとインドネシア政府関係当局は, 各々の政府に対してここに添付される議事録中にある事項を「リコメンド」することに合意した。

ジャカルタ, 1977. 10. 14

ボゴール農科大学学長

署名者; Prof. Dr. Ir. A. M. SATARI

教育文化省高等教育総局大学局長

署名者; Prof. Dr. Samaun SAMADIKUN

計画打合せチーム団長

署名者; Prof. Dr. Jiro SUGI

議 事 録

1. 農産加工パイロットプラントプロジェクト（以下プロジェクトという）は、

国家目標に即して、農産加工技術の振興及び向上に資するためにボゴール農科大学農業工学・農産加工学部で農産加工にかかる施設整備されたパイロットプラントを創設することにより、当該分野の実習訓練の場を確保し、学部職員、学生及び技術・職業学校教職員の技術水準の向上を図るとともに、農産加工に関する技術の開発に寄与することを目的とする。

本プロジェクトは日本国政府及びインドネシア共和国政府の緊密な協力により実施される。

本プロジェクトは以下の活動を行なう。

- (1) パイロットプラントの設置運営
 - (2) 既存の実験室・研究室の設備及び機能の改善
 - (3) 農産加工品の品質管理等に関する実験・実習プログラムの改善及びその実施
 - (4) 学部職員、学生ならびに技術・職業学校の農産加工に携わっている教職員の訓練
 - (5) その他農産加工にかかる技術の改良及び開発に必要な活動
- 2.(1) インドネシア国における農産加工技術の振興の重要性、ボゴール農科大学の付属施設となるFTDCとの機能の調整を考慮し、ボゴール農科大学農業工学・農産加工学部及び技術訓練学校における研究・実習課題の傾向を勘案して本計画は次の加工ラインを主として取り上げる。
 - i. 食用油、精油製造及び廃棄物利用
 - ii. エステート作物（茶・蔗糖）の加工
 - iii. 穀類、根菜の加工及び廃棄物利用
 - iv. 醱酵食品の製造
 - v. 原料及び製品貯蔵
 - vi. 品質管理室及びワークショップ等の設置運営
- (2) プロジェクトには10にいう「合同委員会」によって作成される年次事業計画に従って実施される。
- 3.(1) 日本国政府はJICAを通じて日本の現行法令に従い、コロンプ計画による通常の手続きにより自己の負担においてチームリーダー、農産加工技術及びそれに関連する分野の専門家及び調整員あるいは連絡官（以下日本人専門家という）の役務を供与するために必要な措置を講ずる。
 - (2) 上記日本人専門家ならびに家族は、インドネシア国において付表Iに記載された特権、免除および便宜を与えられかつコロンププランの下にインドネシア国内で働く第三国の専門家に与えられるよりも不利でない特権、免除および便宜が与えられる。

対する請求が生じた場合には、その請求に関する責任を負うことを約束する。ただし日本人専門家の故意又は重大な過失から生ずる責任についてはこの限りでない。

9. ボゴール農科大学学長はプロジェクトの運営および実施について責任を負い、日本人専門家は、プロジェクト実施のために必要な技術上の指導および助言を与える。
10. プロジェクトを成功裡に実施するため付表Ⅳに記載された構成員からなる合同委員会を設置する。委員会は定期的に会合する。
委員会の機能は次のとおりとする。
 - (1) プロジェクトの年次事業計画の策定
 - (2) プロジェクトに必要なローカル予算案の検討
 - (3) プロジェクトの人事配置案
 - (4) プロジェクトの資機材利用のため管理・保安規定の策定
 - (5) ボゴール農科大学内にプロジェクトの実施を遂行する作業小委員会の設置とその運営
 - (6) その他
11. 両国政府は、この添付議事録から、又はそれに関連して生ずることがあるいかなる重要事項についても相互に協議する。
12. このプロジェクトは5年間の期間を想定する。この添付議事録は5年間のプロジェクト実施の基礎となる。この議事録によるプロジェクト運営期間は署名の日から2年間である。この2年間に両国政府はその後の技術協力に関して相互に協議することとする。

付表Ⅰ 特権、免除及び便宜

1. 海外から送金される生活手当に対して又はそれに関連して課される所得税その他の課徴金の免除
2. 海外からインドネシア共和国に持ち込まれることのある身回品及び家材に関して課される輸入税、輸出税その他の課徴金の免除
3. 日本人専門家及びその家族に対するインドネシア政府職員に適応されるものに沿う無料の医療役務及び便宜

付表Ⅱ 日本政府によって供与される資機材

1. 視聴覚機材を含む実習及び研究に必要な機器及び材料
2. 実験用機器及び材料
3. 精油及び食用油製造に必要な加工機械及び付属品
4. 車 輛 類
5. 相互に合意したプロジェクトの効果的な実施に必要なその他の機材

- 4.(1) 日本国政府は J I C A を通じて日本の現行法令に従いコロンボ計画による通常の手続きにより付表Ⅱにかかげるようなプロジェクト実施に必要な設備・機械・車輛・器具・工具それらの予備部品およびその他の資材を自己の負担において供与するため必要な措置を講ずる。
- (2) 上記(1)の物品は陸揚港並びに国際空港において c.i.f. 建てでインドネシア国の関係当局に引き渡された時に、インドネシア国の財産となり、かつこれらの物品は 3.(1)の述べられている日本人専門家のリーダーと協議の下にプロジェクトの実施のためにのみ使用される。
- 5.(1) 日本国政府は J I C A を通じ、日本の現行法令に従い、コロンボ計画による通常の手続きによりプロジェクトに携わるインドネシア人職員を視察又は技術訓練のため日本国に受け入れるため必要な措置を講ずる。
- (2) インドネシア国政府関係者は前記インドネシア人職員が日本国における技術訓練により得た知識および経験がプロジェクトの実施のために効果的に使用されることを確保するために必要な措置を講ずる。
6. インドネシア国政府関係者は自己の負担においてプロジェクトの遂行に必要な以下のものを提供するために必要な措置を講ずる。
 - (1) 付表Ⅲに記載されたインドネシア人専門家およびその他職員の役務
 - (2) 専門家の業務のための施設場所及びプラント据付前に供与される 4.(1)にいう設備、機械、車輛、工具等の設置施設
 - (3) プロジェクトの遂行に必要な下にかかげる土地及び施設
 - i. パイロットプラントの建物及び附帯施設
 - ii. 車務所
 - iii. 車庫他
 - (4) 4.(1)にかかげる J I C A を通じて供与される以外のプロジェクトの実施に必要な設備、機械、車輛、工具、それらの予備部品及びその他の資材の供給及び更新
 - (5) 日本人専門家及び家族のための適当な家具付宿舍
7. インドネシア政府関係者は次のものを負担するため必要な措置を講ずる。
 - (1) 4.(1)にいう物品についてインドネシア国において課されることがある関税、内国税及びその他これらに類する課徴金
 - (2) 4.(1)にいう物品のインドネシア国内における輸送、据付、操作及び維持に必要な費用
 - (3) プロジェクトの実施に必要な全運営費
 - (4) 日本人専門家の公務による国内旅行のための交通手段および経費
8. インドネシア国政府関係者はプロジェクトに携わる日本人専門家のインドネシア国における職務の遂行に起因し、その遂行中に発生し、又はその他の遂行に関連する日本人専門家に

付表Ⅲ インドネシア人専門家及びその他の職員

1. プロジェクトヘッド
2. パイロットプラント管理者及び実習担当者
3. 事務職員及び従業員
4. 雑 役 夫

付表Ⅳ 合同委員会の構成

- 委 員 長 ボゴール農科大学学長
- 事 務 局 長 ボゴール農科大学農業工学・農産加工学部長
- 委 員 教育文化省高等教育総局 大学局長
 教育文化省初等教育総局 技術訓練教育局長
 教育文化省 国際協力部長
 ボゴール農科大学 開発担当理事
 ボゴール農科大学, 農業工学, 農産加工学部, 農産加工学科長
 ボゴール農科大学, 農業工学・農産加工学部, 農業工学科長
 プロジェクト・ヘッド
 日本人専門家のリーダー
 調 整 員

- ノート 1. 日本国大使館員, 国際協力事業団ジャカルタ海外事務所員及び委員長によって必要と認められた関係者は合同委員会の会合にオブザーバーとして出席することができる。
2. 委員長は他の関係機関の責任者を重要事項の報告者あるいは意見陳述者として呼ぶことができる。

3. Plan of Operation (P/O)

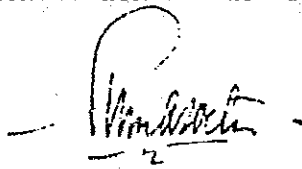
PLAN OF OPERATION FOR THE AGRICULTURAL PRODUCTS
PROCESSING PILOT PLANT PROJECT, IPB, JTA-9(a)(8)

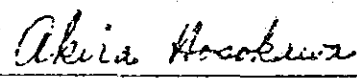
The Japanese Technical Guidance Team organized by the Japan International Cooperation Agency (hereinafter to as "JICA") and the Rector of Institut Pertanian Bogor (Bogor Agricultura University, hereinafer referred to as "IPB"), Ministry of Education and Culture of the Government of the Republic of Indonesia have mutually understood that the period of technical cooperation for the Agricultural Products Processing Pilot Plant Project, IPB, JTA-9(a)(8) (herein- after referred to as "Project") would be for five years starting from October 14, 1977, and that the duration of operation would be for two years, as stipu- lated in Paragraph 12 of the Attached Document in the Record of Discussions signed at Jakarta on October 14, 1977.

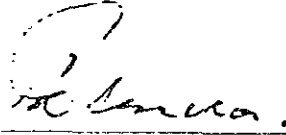
Both parties jointly formulated the Plan of Operation for another three years commencing from October 14, 1979 for the Project as annexed hereto.

The Plan of Operation was formulated according to the requirement stated in the aforesaid Attached Document in the Record of Discussions to serve as reference in taking into consideration that necessary budget will be allocated for the implementation of the Project, and is subject to change within the framework of the Record of Discussions when necessity arises in the course of implementation of the Project.

Jakarta, September 7, 1979


Prof. Dr. Ir. Andi Hakim Nasoetion
Rector, Institut Pertanian Bogor


Prof. Dr. Akira Hosokawa
Head, Japanese Technical Guidance Team


Prof. Ir. Sidharto Pramoetadi
Director for Academic Affairs,
Directorate-General for Higher Education,
Ministry of Education and Culture

ANNEX I

SCOPE OF ACTIVITIES OF THE PROJECT

1. For the coming three years, the goal of the project operation will mainly be stressed on: Firstly, to improve the quality and to increase the quantity of the skilled man-power in the field of Agricultural Products Processing through training by utilizing better facilitated Pilot Plant. Secondly, to develop the processing technique through survey and research.
2. Activities of the Project mentioned in the Record of Discussions signed on October 14, 1977, will also satisfy the needs of FATEMETA-IPB, particularly the Department of Agricultural Products Technology for the coming three years. Therefore, activities for the coming three years for this Project will not basically be altered.
3. It is understood, moreover, that the Pilot Plant will also facilitate the Department of Agricultural Engineering with a wider scope of activities, especially in engineering aspect such as the operation and maintenance of the processing lines as well as the workshop.
4. Processing lines and facilities of the Project for the coming three years, will be basically the same as mentioned in the Record of Discussions.
5. Tentative Implementation Programme for the coming three years is attached hereto. The annual operational work plan should be formulated by the Joint Committee.

ANNEX II

PROVISIONS BY THE GOVERNMENT OF JAPAN THROUGH JICA

1. Experts to be provided
 1. Long term experts
 - i) Leader
 - ii) Fermented agricultural foods
 - iii) Pilot plant management
 - iv) Essential oil/Edible oil
 - v) Coordinator/Liaison officer

2. Short term experts will be provided for Cereals/Tuber crops processing, Tea processing, Sugar technology, Storage and Other categories when necessity arises.

2. Equipment to be provided

1. Processing machinery for essential oil and edible oil production and necessary accessories
2. Processing machinery for estate crops (tea and sugar) and necessary accessories
3. Processing machinery for cereal and tuber crops and necessary accessories
4. Processing machinery for fermented food production and necessary accessories
5. Equipment for storage
6. Laboratory equipment, instruments and materials
7. Vehicles
8. Other necessary equipment, instruments and materials to be mutually agreed upon for the effective implementation of the Project.

ANNEX III

PROVISIONS BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. Services of the Indonesian counterparts and other personnel
 1. Project Head (Chairman of Working Committee)
 2. Pilot Plant Manager
 3. Staff in charge of the plant of operation from D.A.P.T. and D.A.E.
 4. Staff in charge as head of processing lines

5. Clerks and technicians

6. Labourers

Note:

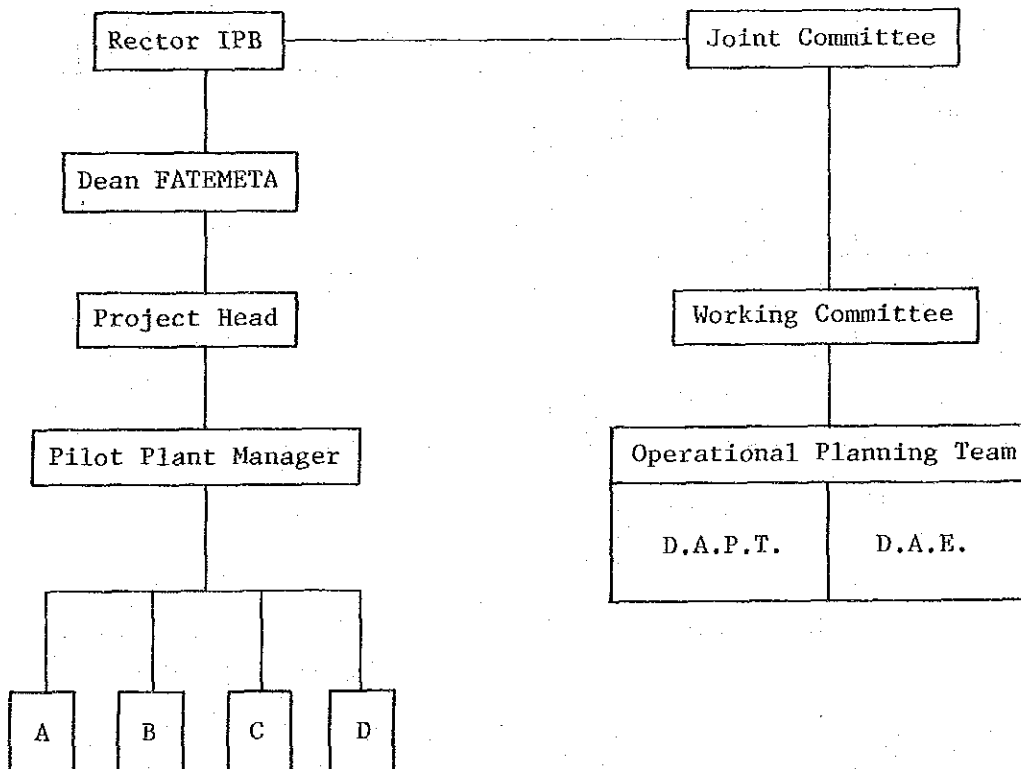
i) D.A.P.T. Department of Agricultural Products Technology

ii) D.A.E. Department of Agricultural Engineering

iii) Operational organization chart attached hereto

2. Existing working space and facilities of laboratories should be made available for the experts.

OPERATIONAL ORGANIZATION CHART



Tentative Implementation Programme for the Agricultural Products Processing Pilot Plant Project, IPP, JIA-9(a)(8)

Item	1977-1978		1978-1979		1979-1980		1980-1981		1981-1982		1982-1983		Remarks	
	4	7	10	1	4	7	10	1	4	7	10	1		4
I. Establishment and management of the Pilot Plan														
1. Construction														
2. Installation and Lines setting														
1) Quality control room														
2) Bean curd line														
3) Noodle line														
4) Starch line														
5) Tea manufacturing line														
6) Sugar manufacturing line														
7) Fermented food line														
8) Rice processing line														
9) Essential/Edible oil line														
10) Generator/Boiler etc.														
II. Upgrading the facilities and relevant function of those existing laboratories and research rooms													Note: After completion of the Pilot Plant and lines setting, activities of this field should be reduced.	
1. Electrical power boosting and building upgrading														
2. Operating of instruments														
3. Observation of exercises														
4. Technical guidance to Indonesian Instructors													Note: Subjects should be prepared at Working Committee.	

Tentative Implementation Programme for the Agricultural Products Processing Pilot Plant Project, IPB, JTA-9(a)(8)

Item	Fiscal Year		1977-1978		1978-1979		1979-1980		1980-1981		1981-1982		1982-1983		Remarks	
	Calendar Year		4	7	10	1	4	7	10	1	4	7	10	1		4
III. Reorganization of the experimental and practical training programme on e.g. quality control of processed agricultural products																
1. Practical and experimental work on quality control																
2. Training on quality control																
IV. Training through FATEMBA staff for students and the technical and vocational school teachers engaged in agricultural products processing																
1. Study tour																
2. Lecture/Seminar																
3. Training																
1) Essential/Edible oil																
2) Estate crops																
3) Cereals and Tubers																
4) Storage																
5) Quality control																
6) Fermented food																
V. Other activities necessary for the improvement and development of techniques related to agricultural products processing																
1. Preliminary survey for traditional food processing.																
2. Research works related to agricultural processing.																

Tentative Implementation Programme for the Agricultural Products Processing Pilot Plant Project, IPB, JIA-9(a)(8)

Item	Fiscal Year		1977-1978		1978-1979		1979-1980		1980-1981		1981-1982		1982-1983		Remarks			
	Calendar Year		4	7	10	1	4	7	10	1	4	7	10	1		4	7	10
VI. Japanese experts																		
1. Long term experts																		
1) Team leader																		
2) Fermented food																		
3) Pilot Plant management																		
4) Essential oil/Edible oil																		
5) Coordinator/Liaison officer																		
2. Short term experts																		
1) By subject																		
2) Installation																		
VII. Technical training in Japan																		
1. Study tour																		
2. Technical training																		
VII. Teams																		
1. Programming/Guidance																		
2. Evaluation																		
IX. Provision of equipment																		

Note: When necessity arises up to joint Committee.

Note: To determine co-operation thereafter.

Note: Equipment for '82-'83 should be only spare parts.

**INTERNATIONAL SYMPOSIUM AND
EXPOSITION ON AGRICULTURAL PRODUCTS
PROCESSING AND TECHNOLOGY**

ORGANIZED BY
THE FACULTY OF AGRICULTURAL ENGINEERING

EXPOSITION 84

FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY
HOGOR AGRICULTURAL UNIVERSITY
in cooperation with
JAPAN INTERNATIONAL COOPERATION AGENCY

WELCOME ADDRESS

This Symposium and exposition is part of the Agricultural Product Processing Pilot Plant (AP4) activities, which is joint cooperation program between Japan International Cooperation Agency (JICA) and Bogor Agricultural University (IPB). The symposium aimed to bring together scientists and professionals in related field from the Asia region to exchange ideas and experience in the development of agricultural technology. It will be focused on the traditional food processing and various efforts to improve it in the future.

The exposition is intended to show the AP4 Project facilities and technical capabilities. The AP4 Project was begun at 1977 and has already been utilized for educational and research purposes. Through this exposition, feedbacks will be gained for further development.

The symposium and exposition was organized by the Faculty of Agricultural Engineering and Technology (FATETA-IPB) and JICA expert Team for AP4 Project. The collaboration of the Department of Education and Culture and JICA-Jakarta Representative is much appreciated.

On behalf of the organizing committee, I would like to express our sincere gratitude to all institutions and persons too numerous to mention, for their enthusiastic support and contribution.

Organizing Committee,

Dr. Ir. Eriyatno, MSAE
Chairman

EXPOSITION TEAM

<u>Coordinator</u>	:	Dr. Ir. Irawadi Jamaran Ir. John Kumendong Mr. T. Kawai
<u>Staff Members</u>	:	
1. Tuber Processing Line	:	Ir. Machfud Ir. C. Hamy Widjaja Basuki, BSc.
2. Tofu Line	:	Dr. Monang Manulang Drh. Slamet Maoen
* 3. Extruder and Noodle Line	:	Ir. Adil Basuki Ahza
4. Jar Fermentor	:	Dr. Ir. Eriyatno Ir. Betty Sri Laksmi Dra. Soeliantari
5. Tea Line	:	Ir. Moedjiarto Pratomo
6. Rice Processing Line	:	Ir. Tuti Priyanto
7. Workshop	:	Ir. Kusen
8. Storage Lab.	:	Dr. Kamaruddin A
9. Quality Control Lab.	:	Drh. Moeljono J
10. Microbiology Lab.	:	Dr. Ir. Srikandi Fardiaz
<u>Technician</u>	:	Soebagio Ibnu Wahid Mansyursyah Hendra Dendra Dedi Rachmat Basri Endang

Participation and contribution of under graduate and graduate students is acknowledged.

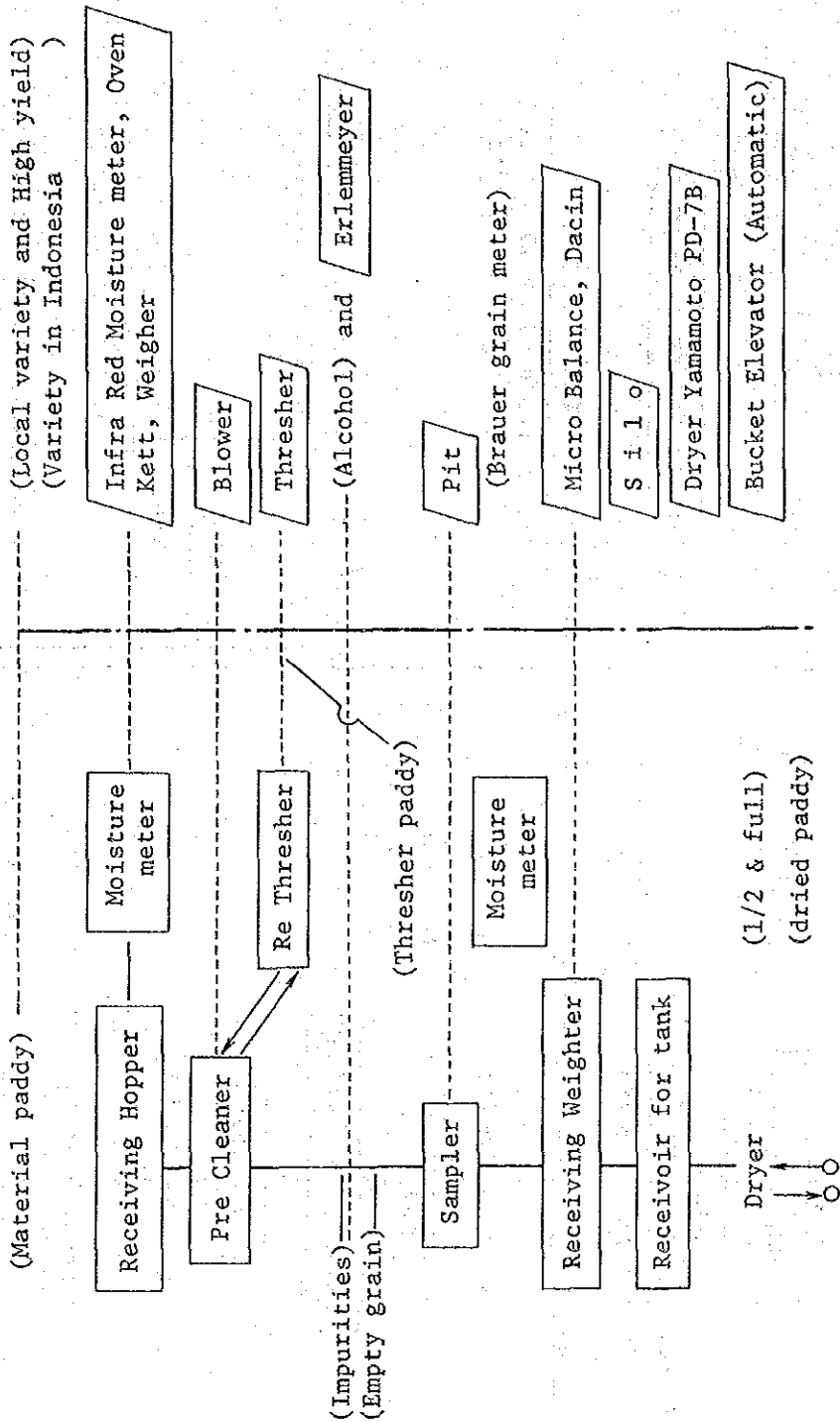
RICE PROCESSING LINE

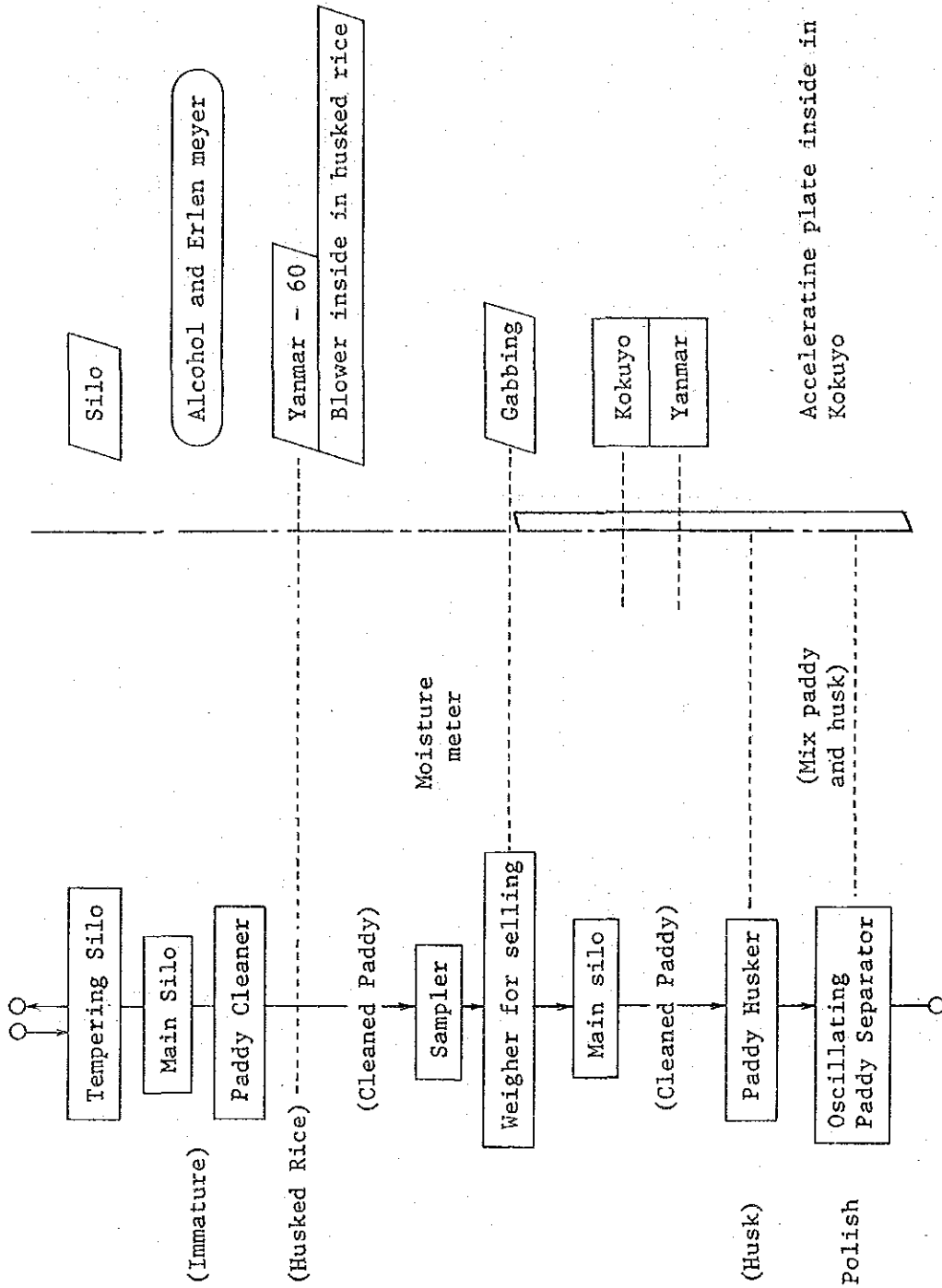
AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

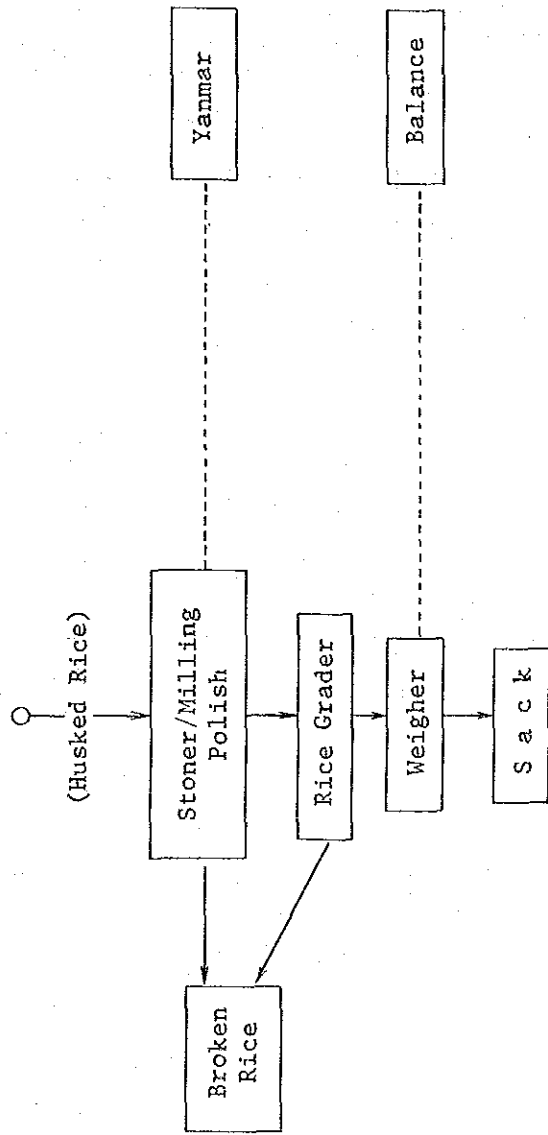
1 9 8 4

Composition of Post Harvest of Rice
 Process from Receiving moist paddy
 to store of partially dried paddy

Equipment is available
 at AP4, FATETA - IPB
 B O G O R







F O F U P R O C E S S I N G

AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

1 9 8 4

MANUAL OF SOYBEAN CURD PROCESSING

1. Soybean

The quality of the soybean plays an important role in getting soybean curd of the best quality. Sortation should be exercised as the starting of processing.

2. Soaking

The first step in soybean curd processing is soaking the bean for several hours in running water. Soaking time 8-10 hours will vary with different condition e.g. temperature of soaking water and the nature of the bean.

3. Check up of the plant

Check the steam supply, water electricity and compressed air.

4. Grinding

The soaked and swollen bean is first drained and then ground in the grinder to break the cells and to extract the soy protein and other compound into the water.

The amount of water to be added should be adjusted to the necessary concentration of the soybean slurry. The concentration 1-8 of the soybean milk will be another important factor for the soybean curd. Antifoaming agent % by weight is added during the grinding.

The slurry is collected in the slurry tank.

5. Boiling of the slurry

The soybean slurry is brought to the steam cooker automatically and cooked. The heat treatment is aimed to inactivating the anti-metritive factors and facilitate coagulation.

The cooking is exercised at 105°C for 10-15 minutes.

6. Separating

The cooked slurry is then separated into the soybean milk and the residue. It is done by two steps of filtration through coarse cloth following by a fine cheese cloth, and it is exercised automatically, immediately when cooking period is completed.

7. Coagulating

About 30 liter of hot soybean milk is collected into soybean milk Tank. Move the tank at a good place for the next step of processing! And set up the stirrer by immersing it in the soybean milk.

The coagulation is completed in this tank by the addition of a of coagulant, 65 gram of CaSO_4 in 1.5 to 2 liter of water and quickly a short and vigorous agitation.

Then wait and let the soybean milk stand still about 7 minutes for curdling the coagulum.

*) Other coagulant MgCl_2 vinegar or glucuronolactone.

8. Place the curd molder on the position under the press equipment and lay down the nylon cloth of sponge mat in the molder, snap the curd with another cloth, then cover it with the metal plate and set for the pressing.

Pressure of 3 - 4 kg/cm^2 is recommended when it is squeezed out the coagulum is concentrated to a firm curd block.

Cooling

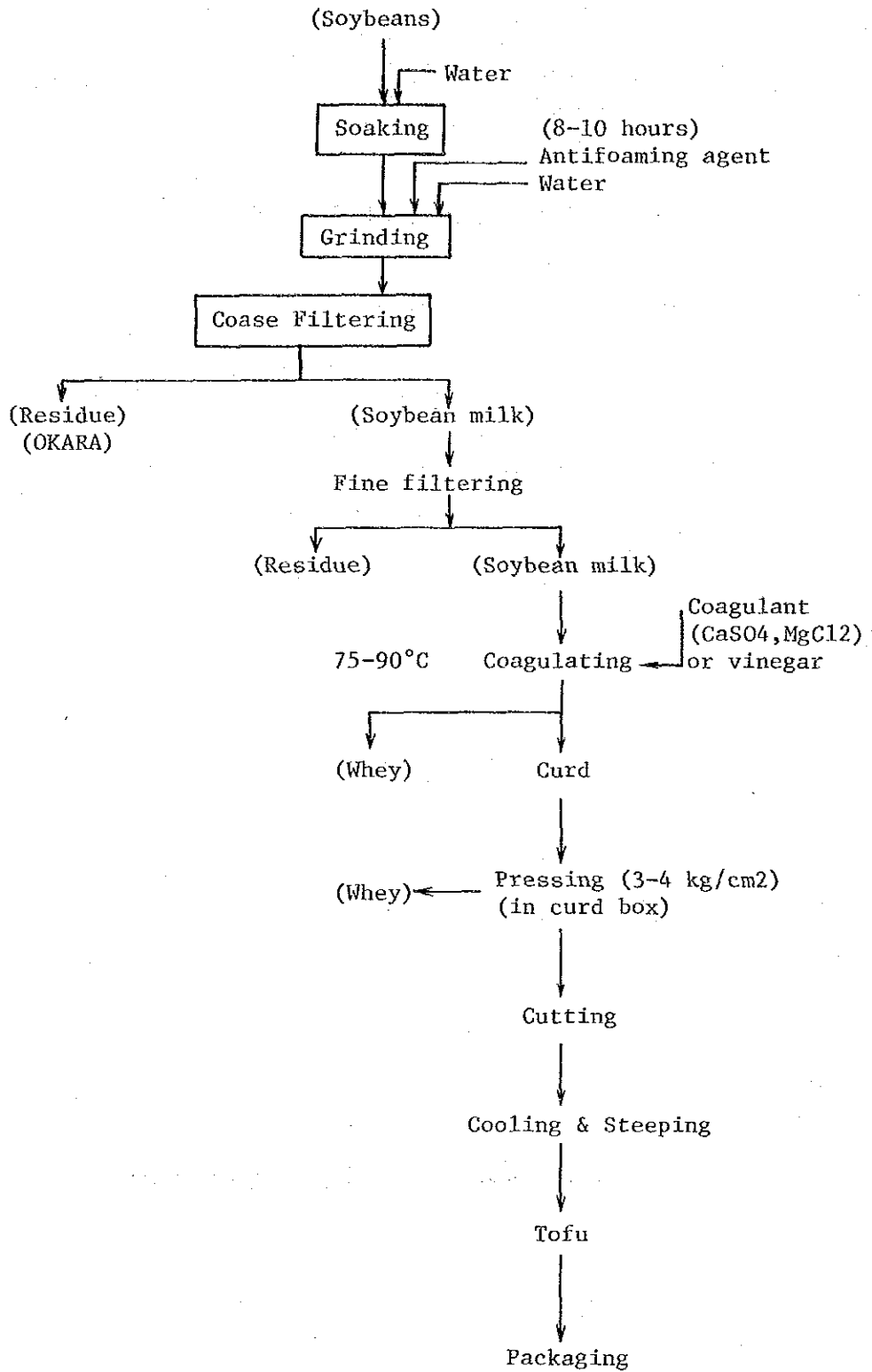
Cut the curd block into pieces and cool it down by boiling in cold water.

Soybean curd is ready.

Packaging

The soybean curd is then packed in a plastic pack with addition of clean water and then it is covered with a plastic sheet and sealed it in packaging machine.

Block Diagram of Tofu Processing



J A R F E N M E N T O R

AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

TECHNICAL SPECIFICATION

Model : MSJ - U2
3 Unit with Capacity
20 - 25 liter/until

Accessories : - Boiler
- Compressor
- Water cooling
- Steam piping and valves
- Electrical power

Process

Sterilization
120°C, 2 hours

Cooling, 30°C

Innoculation
with culture

Incubation/
Fermentation

Product

P R O D U C T

1. Enzyme Pectinase
Broth : Molase, $(\text{NH}_4)_2\text{SO}_4$; HK_2PO_4 ; ZnSO_4 ; $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$; Peptone
Culture : Aspergillus Carbonarius
p H : 4.5
Agitation:
D O : 10 ppm
2. Enzyme Amyloglucosidase
Broth : Enzyme Pectinase
Culture : Aspergillus niger
p H : 4.5
Agitation: 250-300 rpm.
D O : 90 ppm.
3. Liquid Sugar
Tapioca : Sago starch.
Enzyme : amylase, glucoamylase
p H : 4.5
4. Alcohol
Broth : Sucrose; $(\text{NH}_4)_2\text{SO}_4$; peptone; yeast extrac; KH_2PO_4 ;
 K_2HPO_4 ; NaCl; $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$.
Culture : Sach. Cerevisiae
5. Acetic acid

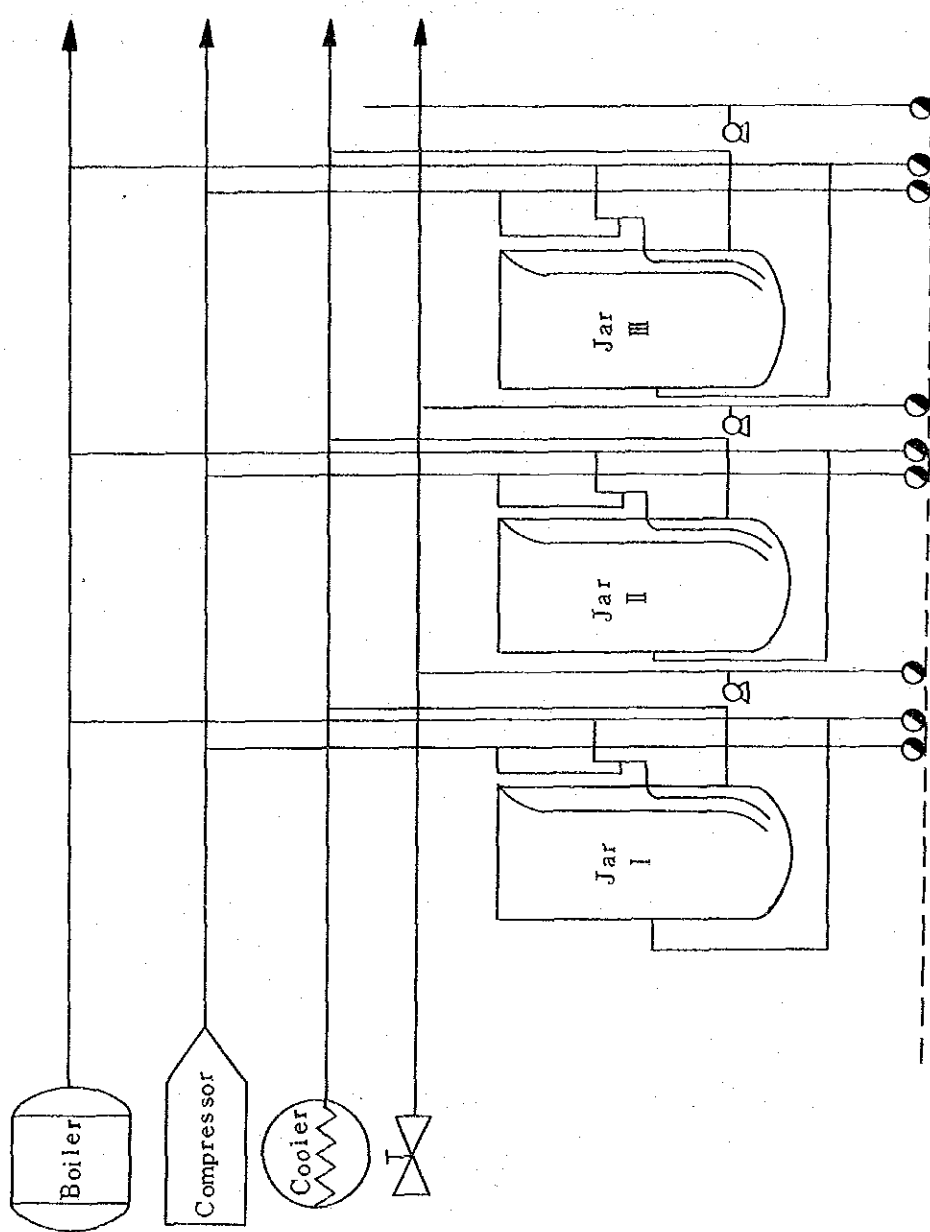


Figure : Layout Schedule of Jar Fermentor

TUBER PROCESSING LINE

AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

1 9 8 4

TUBER PROCESSING

1. Starch extraction

The plant has an excellent nozzle separator (Disc Bowl Centrifuges) to refine and concentrate of starch milk.

The concentration ratio on Nozzle separator is approximately 4 times, to supplied starch milk. So that in order to take Be' 16 - 18° starch milk, it is able to recycle in refining process.

2. Fermentation

Three (3) 30 L Jar Fermentor has been installed, and the fermentor be utilized for Liquefaction and Saccharification of starch and Alcohol fermentation.

3. Spray dryer (Mobil Minor spray dryer)

5 L/Hr. centrifugal : Rotary Atomizer various liquid can be dry up on this spray dryer.

Standard operation of starch processing plant

1. Cassava roots

Washing and skin off cassava roots by ROOT SKIN OFF MACHINE PL-22 S

2. Rasper

(1) Due to motor capacity only 0.75 KW., do not push so strongly cassava roots to the disc rasping plate.

(2) Adjusting Water supply

Add water into receive tank of rasping starch milk to take easy transfer by the pump.

(3) Vibrating screen

Supply rasping starch milk continuously and evenly to vibrating screen to take better separating efficiency into Raw starch milk and sludge.

(4) Starch milk tank

Press switch of agitator when starch milk goes into the tank. Keep raw starch milk in the tank until finish ras-

ping of supplied cassava roots, the manual agitation is needed to avoid sedimentation of the tank.

After resping be completely finished, then raw starch milk be transfered to the next process which is the separation, washing and concentration process.

5. Auto brush

The function of Auto brush is to avoid block of Nozzle in separator. Drain off the water in Auto brush at the processing over.

6. Nozzle separator

Main purpose of nozzle separator are concentration of starch milk and washing of starch itself.

1. Operating revolution is 6,000 rpm.
2. The concentration ratio is depend on nozzle diameter and starch milk flow rate to nozzle separator. General concentration ratio is around 3 to 4 times for supplied starch milk.
- * 3. When abnormal sound occur on nozzle separator during operating time, separator should be blocked with starch of scale. In this case, stop the machine first and wash again nozzle tip according to the disassembly instruction of nozzle separator.

7. Concentrated starch milk tank

When separated starch milk goes to the tank, press switch button starch to operate.

8. Rotary fine screen separator

High mesh Nylon screen is employed to take out fine cellulose in starch milk.

When concentration degree of starch milk will be reached over 8° Be', the protein in starch milk will be grown up more bigger size to easy separate at Rotary fine screen.

N o t e

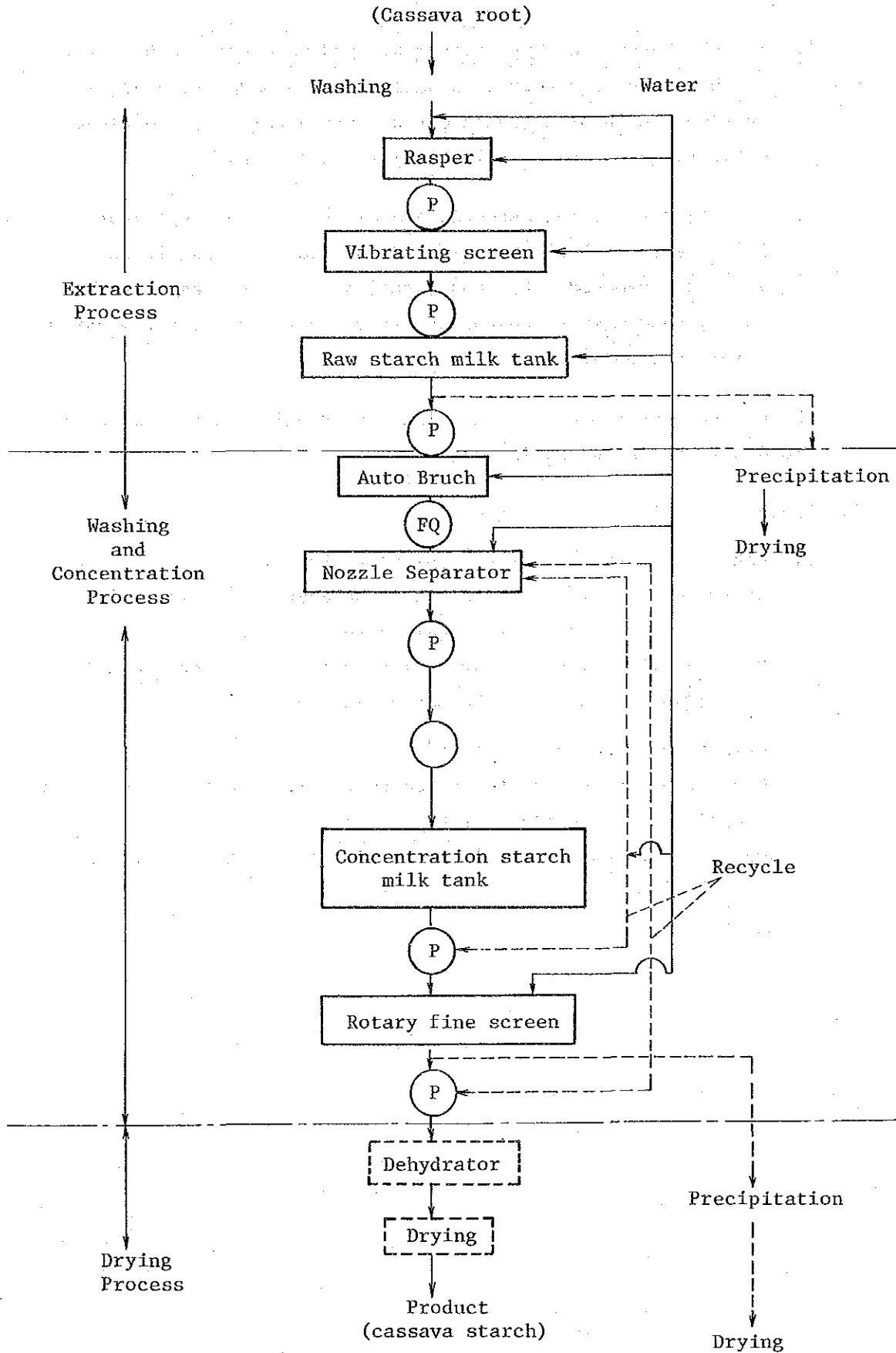
1. For the better quality of starch, need more washing by water. In this case, the recycle process among separator, concentration starch milk tank and fine rotary screen be continued until to reach the excellent whiteness starch.
2. Attention to during assemble and disassemble of separator. Screw parts of Bowl which is made of SUS 304, then it is very easy damaged with sand especially. Thus take attention to any sand must be taken away from the stainless screw parts before assemble.

While assemble of Bowl, if rotaring of screw is not turn smoothly, immediatly check and polish again.

9. Drying

1. Dehydration by the basket type contrifugal.
Starch milk of 10 to 15°Be' is to be charged continuously into the center of centrifugal basket.
Starch milk in supply tank have to stir to prevent the sedimentation of starch at the botton in the tank.
2. Drying under sunshine outside
Distribute wet starch to the bamboo basket and spead even then keep it under sunshine for the drying.
Moisture content in final starch will be normaly about 15%.

Cassava Starch Processing Flow Diagram



Festing Result

Material

- Sample material : Peeled cassava tuber from bitter varietas plant.
- Age : 11 months
- Weight : 129,5 kg
- Moisture content : 48.58 %

Processing

Consuming time/time consumption

- Rasping : ± 45 minutes
- Extraction : ± 68 minutes
- Separation : ± 40 minutes
- Screening : ± 40 minutes
- Whole processing (without drying) : ± 193 minutes

Consuming water/water consumption

- Rasping : 2151 lt.
- Extraction : 170 lt.
- Separation : 924 lt.
- Screening : 923 lt.
- Whole processing (without washing the equipment) : 4168 lt.

Yield

- fruid (starch milk) : 9,5 °Be'
- product weight : 43,1 kg
- Moisture content : 18,13 % WB
- Whiteness : 104 %

Residue

- Pulp residue : 95 kg
- Weight moisture content : 76.75 %

Operation : Concentration process without recycling.

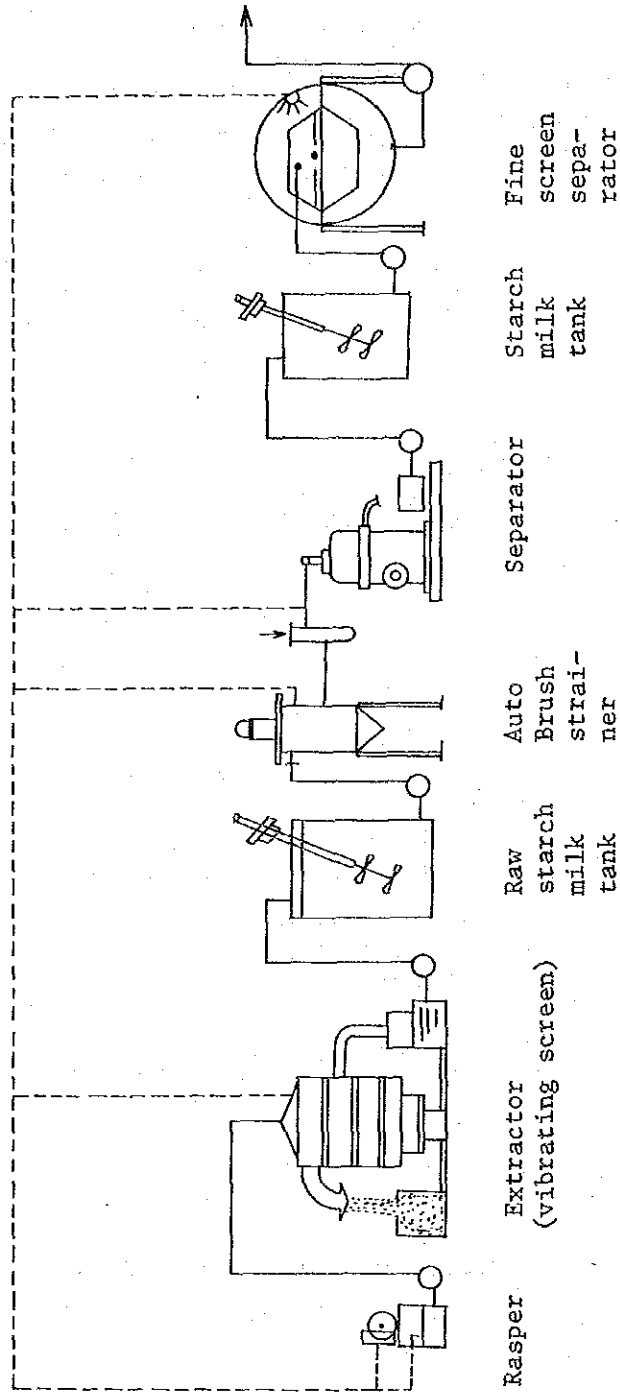
Note : Percentage of rendement due to the age of the cassava plants and this varieties, as well as to the demand of the starch quality.

The starch quality can usually be arranged by the steps of processings; e.g. :

1. direct precipitation after becoming raw starch milk.
2. without recycling during the concentration process.
3. times of recycling.

Starch processing flow sheet

water



TEA PROCESSING LINE

AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

1 9 8 4

MANUFACTURING PROCEDURE OF TEA PROCESSING (TEH HITAN)

1. Preparation

1. Purchase of tea leave : on July 31st, 8 kg
2. Storage in Prehab-Refrigerator in over night :
Display on three (3) bamboo baskets each 2.5 kg until morning to start the room withering.

2. Processing : On August 1st

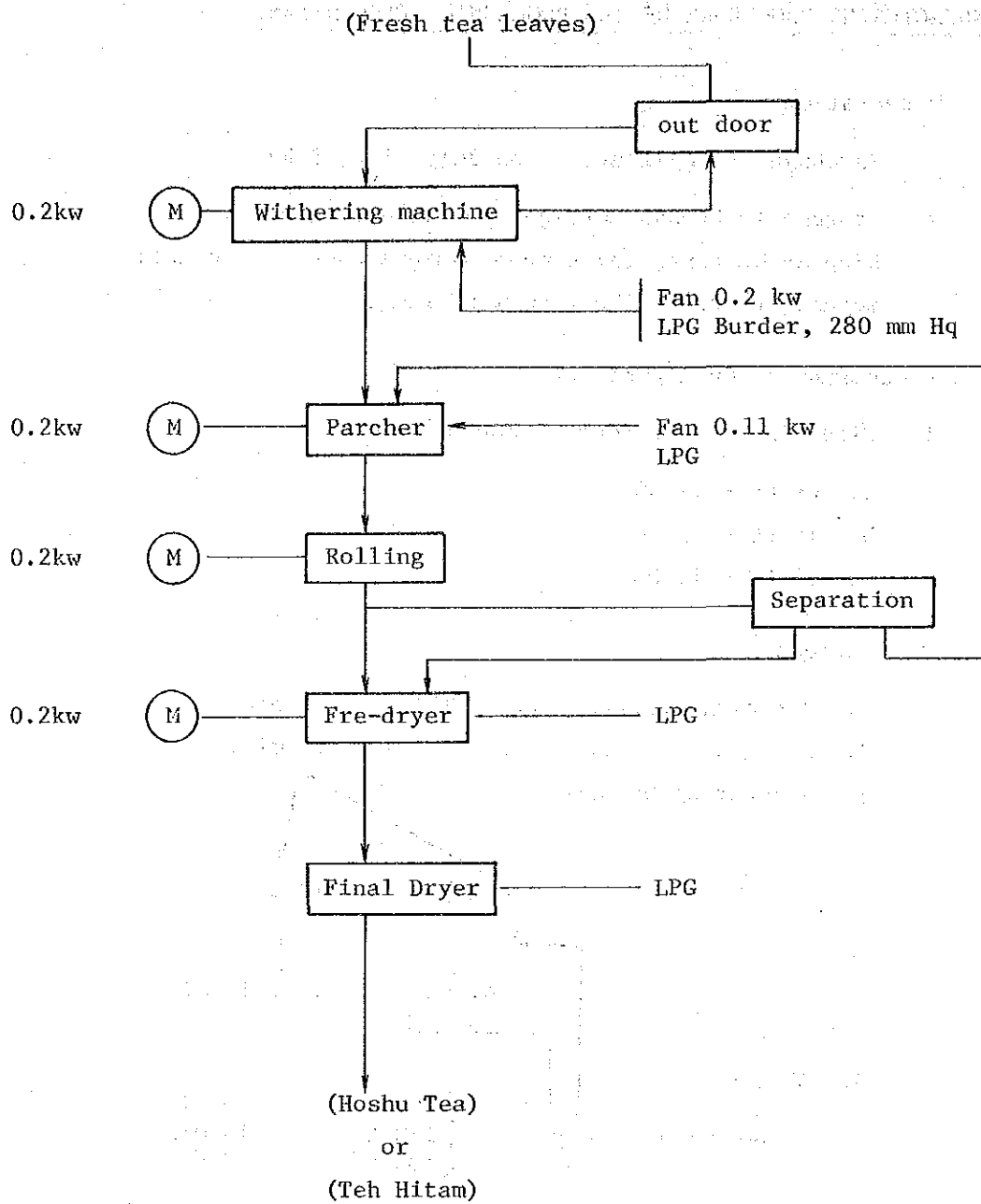
1. Withering in the room, 3 hours each
 - a. 09.00 - 12.00
 - b. 10.00 - 13.00
 - c. 12.00 - 15.00

2. Procedure

1. Parching 85°C 15 min.
2. Rolling 10 min.
3. Separating by hand


```

          graph TD
            A[3. Separating by hand] --> B["(small)"]
            A --> C["(Big)"]
            B --> D["4. Rolling ..... 10 min."]
            C --> D
            D --> E["5. Drying"]
            E --> F["1. Secondary dryer : { 90°C 30 min., 150°C 15 min., 100°C 30 min.}"]
            F --> G["2. Final Dryer : 70°C 1 hour"]
          
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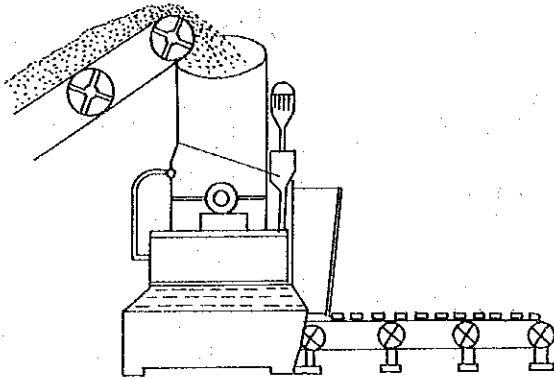


EXTRUDER
&
NOODLE LINE.

AGRICULTURAL PRODUCT PROCESSING PILOT PLANT

1 9 8 4

EXTRUDER



Description :

- cooking temperature: 120-200°C
- Rpm (mainshapt) : 240-248
- main motor : 200V; 20HP
- Heater : 200V; 1,5Kw.
- Capacity : 60 kg of finished products

Faculty Agricultural Engineering & Technology has been dealing with extrusion technology since 1976. We used to dealt with Brady Cop Cooker - type 206 until 1980. Even though it was originally designed to provide farmers and small feed mill operators, it is recently used to process food for human consumption. But because of economical reason we consider not to continue in using it for research. Since 1982, we start dealing with our new extruder, here in AP4 Pilot Plant. This new extruder is called grain puffing machine.

It's a single screw type extruder, hence having a lot of limitation of processing condition i.e. we can not control the ppm and barrel temperature the raw material moisture content should bw less then 12% and many other disadvantages of single screw-type extruder.

Any how this machine has been very useful and accelerates our task of tridharma.

1. Education

This machine has been used in, at least, 5 (five) subjects for explaining the extrusion proses, physico-chemical changes during extrusion proses & its texturization, to acquaint student with a certain model of extruder and its proses operations as

well as its application for agricultural product development & product processing. Two students were graduated through the help of this extruder in 1984.

2. Research

Due to the lack of fund, there was only one title of research finished, i.e. Weaning food formulated from soybean, rice and mungbean extrudates. Many field of research is widely open and can be done with this machine. Some of the bare example and (still) under planning which can be done in the near future are:

- a. proses development of breakfast cereals, infant foods, snacks, dry soup mixes, instant gruels, pastas and beverage power e.t.c.; which have forms familiar to the Indonesian consumer.
- b. studies on the microstructure of the extrudates relation between chemical interaction and its physical properties of chemical and biochemical changes of foods-tuff during extrusion cooking, e.g: to debitter or denature a certain protein, to destroy or to detoxify growth inhibitors & toxicants, studies on the texture and Theology properties of food during extrusion, fixation of rice bran, e.t.c.; which will be proper for graduate student's research.
- c. studies on the pasteurization microbial spore distruction, and many other microbiological studies which can be done with HT/ST process through extruder.

3. Public services

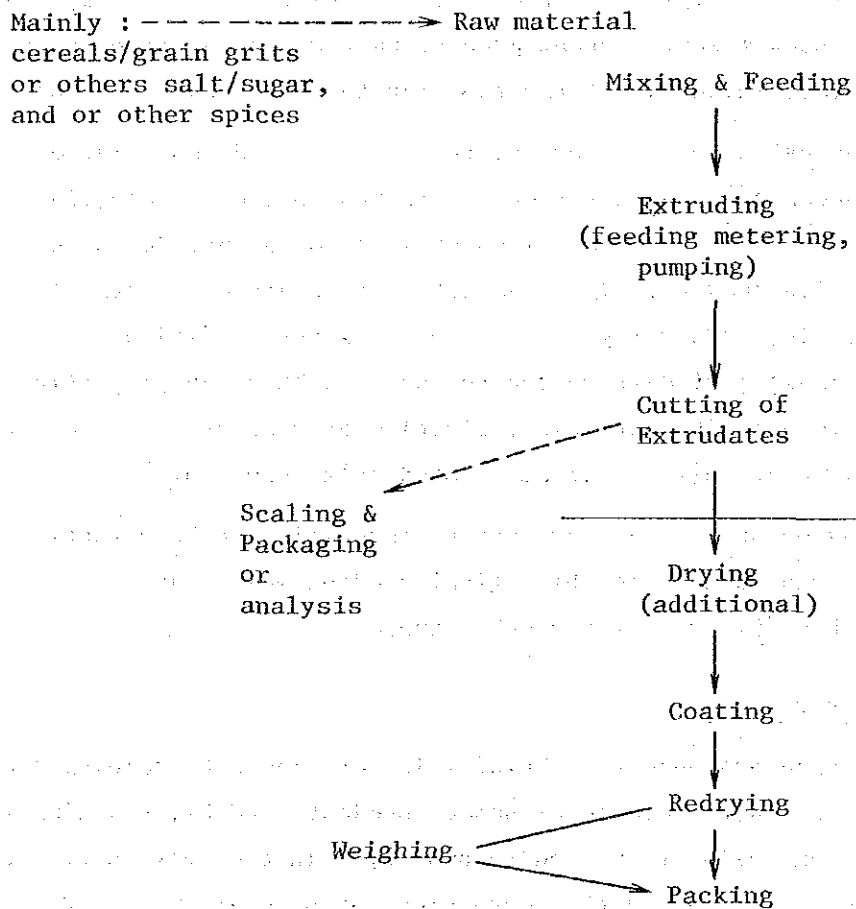
Our machine has been very helpful in carrying out training program for extensioner, vocational school students (PGKP), training for special extensioner on food technology. In the near future we planned to studies on the improvement of several traditional food proessing, to increase our ability in public services.

Why extruder is helpful

This machine has at least seven merits:

1. Modify starch
2. Abundant in material to be used
3. 90% of material can be processed into product
4. Easy to handle
5. Takes up no greater space
6. Stout
7. Economical

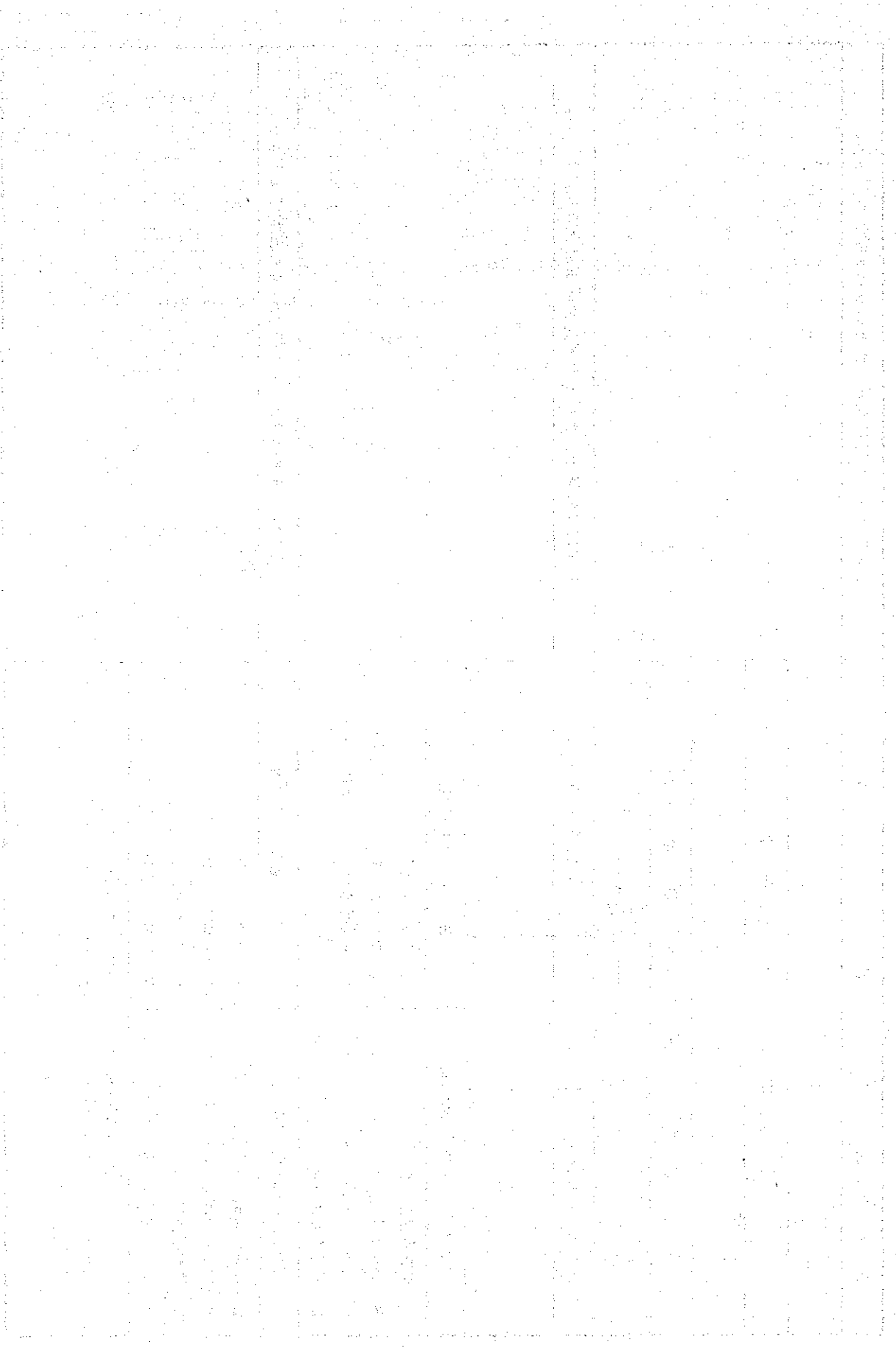
Flow process chart of extrusion cooking



Processing condition which may be regulated are temperature, moisture added/content, feeding rate, formula/raw material forms etc.

5. プロジェクト研修員受入れ部門アンケート調査表

来日年度	氏名	日本での研修で特に良かったと思う点を挙げて下さい。	
研修時の所属・職名			
現在の所属・職名			
日本での研修期間	期	研究指導教官名	日本での研修中、当面した困難や問題点を挙げて下さい。
日本で行なった研修は帰国後、		日本での研修期間は、	
A 非常な役立った		A ちょうど良かった	
B かなり役立った		B 長すぎた (ケ月くらい)	
C どちらとも言えない		C 短かすぎた (ケ月くらい)	
D 役立たなかった			
研修受入先の研究設備は、		研修中の生活費等の支給は、	その時、研修全般について意見があれば書いて下さい。
A 非常に満足できるものだった		A 十分であった	
B だいたい満足できるものだった		B 普通であった	
C やや不備であった		C やや少なかった	
D 全く不備であった		D 非常に少なかった	
上記4項目についてコメントがあれば書いて下さい。			



JICA