Postharvest Institute for Perishables

POSTHARVEST PLANNING FOR PERISHABLE CROPS

INDONESIA, 1983

by

Robert E. Julian, Field Director
Postharvest Institute for Perishables

GTZ Report No.
PIP/Indonesia/May 83/No. 10

University of Idaho

in cooperation with
United States Agency for
International Development

Project Title: Storage and Processing of Fruits and Vegetables
Project No. AID/DSAN-CA-0265
Washington, D.C., U.S.A. 20523

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I. EXECUTIVE SUMMARY

The USAID/Indonesia Mission requested in cable Jakarta 06357 that Dr. Robert Julian of the Postharvest Institute for Perishables (PIP) provide technical assistance of two weeks in a planning conference at Jakarta with the Sub-Directorate of Horticulture, Directorate General of Food Crops, and the Ministry of Agriculture, to assist in the national planning for the assessment of postharvest losses for vegetables, fruits and other perishables in Indonesia. He was also requested to participate in a planning conference with officials of BULOG regarding postharvest management activities of selected cooperatives in Indonesia.

In response to this request, Dr. Julian provided one week of assistance, May 9-13, 1983. Due to previously scheduled activities, it was not possible to provide two weeks assistance; however, the full scope of work was fulfilled.

The results of Dr. Julian's observations, discussion and recommendations in regard to postharvest planning are as follows:

1. The climate and soil of Indonesia are ideal for fruit and vegetable production. There is government interest in intensifying production and marketing - both domestic and international - in fruit crops including avocado, orange, banana, papaya, mango, salak, pineapple, apple, grape, rambutan, and duku. Interest in vegetable crops includes cabbage, carrot, Chinese cabbage, tomato, red onion, chili and Irish potato.
2. The lack of a market infrastructure for perishable commodities results in heavy postharvest losses, especially in transport and handling. This causes commodity deficits, related price fluctuations and the necessity to import some commodities for the domestic market.
3. There is a definite need for study of the overall production marketing system before knowledgeable planning can be determined that will best fit the needs of Indonesia.
4. Recommendations for intensifying production and reducing postharvest losses of perishable crops focus primarily on needs for education, applied research programs, the development of marketing information to the farmers, an effective marketing system and quality postharvest management in harvesting, handling, transportation, storage, processing and marketing.

II. SCOPE OF WORK

DATE: : May 13, 1983

CONSULTANT : Robert E. Julian
Postharvest Institute for Perishables
University of Idaho
Moscow, Idaho 83843 U.S.A.

DURATION : May 9 - 13, 1983

SCOPE OF WORK :

1. Consult with a Government of Indonesia working group consisting of the Sub-Directorate of Horticultural Crops, the Directorate of Horticulture, the Directorate General of Food Crops and the Ministry of Agriculture. Discuss planning for the assessment of postharvest losses of vegetables, fruits and other perishables in Indonesia directed at future production intensification and export trade.

2. Discuss with BULOG technical assistance activities in regard to postharvest management of selected cooperatives in Indonesia.

III. BACKGROUND

Indonesia has the climate and soil to produce almost any kind of fruit or vegetable in the humid tropics. Specific fruit crops for production integration that are being considered in the National Plan include avocado, orange, banana, papaya, mango, salak, pineapple, apple, grape, rambutan and duku. Major vegetables include cabbage, carrot, Chinese cabbage, tomato, red onion, chili and Irish potato.

To date, the Government of Indonesia has provided only limited assistance in the production and marketing of the above crops. Therefore, the farmers only marketing is to the traders or if near a city, they sell crops on the free market.

Transportation remains one of the major problems for perishable crop marketing. Areas for the development of the fruit and vegetable industry are: North Sumatra, South Sumatra, West Java, Central Java, Jogyakarta and South Sulawesi. These areas are now under consideration by the Sub-Directorate of Fruits and Vegetables for a Crash Program Project for Fruits and Vegetables.

Production

Production records for vegetable crops are almost nonexistent because the majority of the production comes from small farms of 0.5 hectare or less. Production that is not consumed by the family is sold to traders or in public markets.

Fruit crop production comes from small to medium farms. The larger farms produce citrus, pineapple, banana and mango. Because of transportation problems, perishability of the crops and the instability of the market, processing has been developed in only a few large production areas. Most fruit is sold fresh through traders or direct to the fruit market.

Transportation

Transportation is very poor from farm to market except near the large metropolitan areas; therefore, when perishable crops arrive in the market their quality has tremendously deteriorated. Outer islands production must be picked up by coastal vessels whose schedules do not permit maintenance of quality to the wholesale or retail market.

Handling

Most fruit products are handled in bamboo baskets which cause considerable damage of soft skin fruits at the bottom of the baskets. This is primarily true with mango and avocado. The methods of handling of banana also cause considerable bruising. Vegetables as observed at the wholesale market arrive in better condition than fruits. Excellent quality was observed on cabbage, carrots, onions, chilies, potatoes and tomatoes.

Processing

Fruits come to market in all sizes. Other than simple sorting by farmers when packing, nothing more is done. Upon reaching the wholesale market the retail vendors may select from bulk for their trade.

Vegetables seem to be more uniform than fruits except for carrots which come in all shapes and sizes.

From informal sources it was revealed that there does not seem to be any grading system established for fruits and vegetables.

Information on processing plants for fruits and vegetables could not be obtained, therefore it is assumed that none have been established.

Marketing

The Government of Indonesia through the Bureau of Logistics (BULOG), has established a marketing structure for government support of paddy/rice, secondary crops (corn, soybean, peanut and cassava) and fruits and vegetables. But the only area of government marketing support to date has been with paddy/rice. Presently corn, soybean, peanuts and cassava are being reviewed for production and postharvest development. A Secondary Food Crops Development Project has recently been approved under a USAID loan and will soon be implemented. The major goals of the project are the development of an improved cropping system, improved postharvest operations and market development, and support for the secondary crops.

Wholesale Markets

In reviewing the wholesale markets of Jakarta the following conditions were observed. Without a doubt, the wholesale market facilities, sanitation and general operating conditions were extremely poor. The service areas for trucks unloading were a quagmire of mud and water, and was not accessible by foot except with boots. The selling floors were very unsanitary with mud and plant debris tracked in from the service areas. No management control was

observed. No facilities were observed for handling spoiled commodities except by waste piles where product wastes were consumed by goats.

Retail Market

Stores, stall vendors, street vendors.

IV. PLANNING FOR DEVELOPMENT OF FRUITS AND VEGETABLES

Contacts: Six members of a working committee attended.
Mr. Hendro Jarwo, Directorate of Secondary Crops
Mr. Soepari, Directorate of Food Crops
Mr. Jafri Jamaluddin, Directorate of Food Crops
Others

The following are the goals under the "Crash Program for Fruits and Vegetables Development":

1. to stop imports,
2. to increase domestic production, and
3. to develop export markets.

First Priority: Upgrade production and develop markets for papaya, pineapple, banana and watermelons.

Second Priority: Develop vegetable seeds and root stock for improved production of vegetables and fruit crops.

Third Priority: Initiate training programs for Agricultural Extension personnel on improved production methods and areas relating to postharvest management (harvesting, handling, storage, transport, processing and marketing).

Fourth Priority: Upgrade production and marketing of orange, mango, avocado, apple and grapes.

Discussions:

It was determined that a production and marketing profile and loss assessment study would give the basic information in determining a perishable crops program (see Appendix C for areas to be studied and crops to be addressed).

Method of Data Collection:

A team of 4 specialists:

1 - Agricultural Economist

1 - Vegetable Crop Extension Specialist

1 - Fruit Crop Extension Specialist

1 - Agricultural Engineer (processing)

The Agricultural Extension Service will assist the team in collecting the information. Data will then be processed by the team into a marketing profile.

The Sub-Directorate of Horticulture will request the National Steering Committee of the Secondary Food Crops project for funding the technical assistance needed in the studies.

V. DISCUSSIONS WITH OFFICIALS OF DEPARTMENT OF COOPERATIVES

Contacts: Mr. Muslimin Nasution, Director of Research and Development (Department of Cooperatives)

Dr. Harli Ginto, Department of Cooperatives (Marketing System)

Discussions:

Mr. Nasution discussed the importance of marketing in regard to cooperative management. The original request by Mr. Amin for six months of technical assistance in "Cooperative Management" was discussed with Mr. Nasution.

Mr. Nasution will contact Dr. Lucas, USAID for proper procedure to make the request for funding under the Secondary Food Crops loan.

VI. RECOMMENDATIONS

A. Sub-Directorate of Horticultural Crops

Areas that will require technical assistance:

1. A four-man team to conduct a 6-8 week study on marketing profile and postharvest loss assessment for secondary crops on fruits and vegetables.
2. Observational training of two weeks at the Philippine Food Authority, Food Terminal, Inc. (FTI), Manila, Philippines for 4-6 persons, to include selected members of the National Postharvest Working Group.
3. Develop a vegetable seed program and tree nursery for fruit crops at a national research center or university.
4. Develop national grading standards for fruits and vegetables.
5. Initiate an in-service training program for Agricultural Extension workers on improved production management methods and postharvest management for harvesting, handling, transportation, storage, processing and marketing of fruit and vegetable crops.
6. Develop an export market for the exotic fruits and some selected vegetables that are in demand by the East Asia and Near East markets.
7. Establishment of a marketing structure directed at quality commodities, government-regulated at the wholesale market level. This is to include:
   a) construction of sanitary wholesale markets, government-managed, and
   b) construction of retail marketing areas with specific regulations that sellers/retailers are required to follow.

B. Department of Cooperatives

1. Recommend that a Cooperatives Management Technologist be contracted for six months under the Secondary Food Crops loan to assist in cooperatives marketing development.

Appendix A

PRE/POSTHARVEST SYSTEM

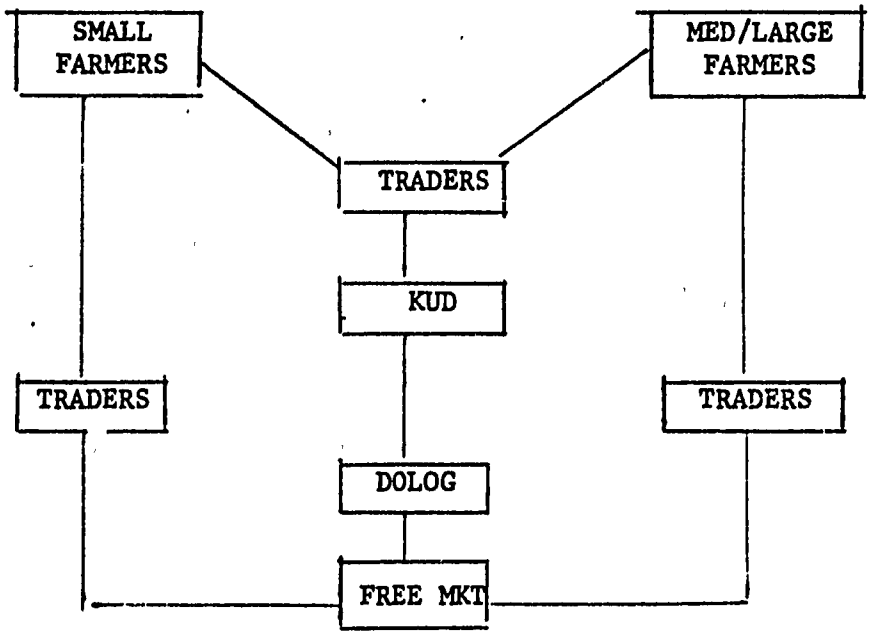
	Input Supply	Production	Processing	Marketing
Paddy	*KUD BIMAS or INMAS -seed -fertilizer -insecticide	Small Holder (Majority of farms less than 0.5 ha/ family	(Small Rice mill) KUD Large Rice mill (Private) majority small farms Quality becoming better due to govt. support	Paddy sold to traders or KUD KUD sells to DOLOG or market DOLOG sells to Coop. or Traders
Secondary Crops	KUD/Non KUD Majority Non BIMAS INMAS	Small to medium land holders	Medium to big traders KUD Quality poor due to transport	Farmers sell to KUD/or Traders DOLOG sells to the Traders Free market
Fruits & Vegetables	Non BUNAS/ INMAS (majority)	Small up to large holders	Individual farmers (majority) very poor quality	Traders or Free market

* KUD Village Cooperative Unit

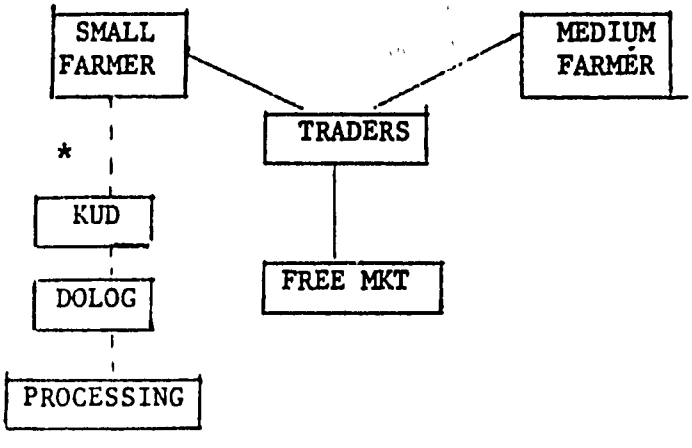
Appendix B

MARKETING CHANNELS

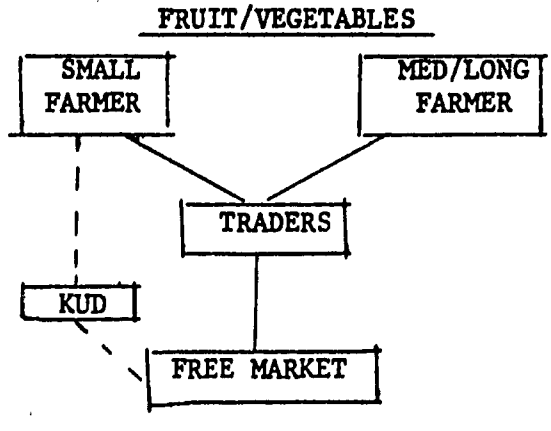
PADDY/RICE



SECONDARY CROPS



FRUIT/VEGETABLES



*- - - - - - -(in place but not initiated to date)

Appendix C

	Fruits										Vegetables							
	Avocado	Orange	Banana	Papaya	Mango	*Salak	Pineapple	Rambutan	Duku		Cabbage	Carrot	Chinese Cabbage	Tomato	Red Onion	Chili	Irish Potato
1. North Sumatra	X	X				X	X		X		X	X	X	X	X	X	X
2. South Sumatra		X					X						X	X		X	
3. West Java	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
4. Central Java		X	X	X	X			X	X		X	X	X	X	X	X	X
5. Jogyakarta			X			X									X		
6. East Java	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
7. Bali		X	X	X	X	X	X					X	X		X		
8. West Nusa Tenggara					X										X		
9. North Sulawesi				X					X				X	X		X	
10. West Kalimantan		X							X								
11. South Sulawesi		X	X	X	X	X		X	X		X		X	X	X		X

* Salak (Salaca Edulis (Lin))

Ministry of Agriculture cropping plan

CRASH PROGRAM PROJECT - FRUITS & BEGETABLES

Appendix D

AGRICULTURAL EXTENSION STRUCTURE
(27 Provinces)

1974 National Food Cooperative Extension Project (FCEP) was funded with 14 Provinces

1981 National Agricultural Extension Project (NAEP) was initiated - increasing the Provinces to 27
To include : Food crops
Fisheries
Livestock
Estate Crops
Forestry

Structure

Province

WKPP	= Agricultural Extension Working Area	1 - WKPP = 12 WKBPP = 15,000 to 25,000 farm families
WKBPP	= Rural Extension Center (REC) Working Area	

WKPP Field Extension Working Area
(PPL = Field Ext. Workers)
Java = 1,600 farm families per PPL
Outside Java = 800 faram families per PPL
Transmigration = 500 farm families per PPL
(Each PPL covers 600 - 1000 Hectares)

FGWA = Farmers Group Working Area

Training 1 - PPL trains 6 groups or 10 - 15 farm families each farm family extends learning to 5 other families = 1 PPL per 3200 farm families

Appendix E

AGRICULTURAL EXTENSION SERVICE AREAS

Province	Fruits			Vegetables		
	District	Sub District	Village	Distict	Sub District	Village
1. N. Sumatra	8	38	386	8	38	226
2. S. Sumatra	10	55	147	10	34	68
3. W. Java	20	203	1601	20	76	310
4. C. Java	27	339	5533	27	89	526
5. Jogyakarta	5	51	406	3	12	51
6. E. Java	24	158	1475	25	118	674
7. Bali	8	50	533	7	22	82
8. W.Nusa Tenggara	6	54	472	6	35	180
9. N. Sulawesi	4	33	477	3	11	83
10.W. Kalimantan	7	42	214	0	0	0
11.S. Sulawesi	22	144	877	21	75	272
TOTAL	141	1,224	12,121	130	510	2,472

Appendix F

AGRICULTURAL EXTENSION SERVICE

NUMBER OF AGRICULTURAL EXTENSION WORKERS AND EXTENSION WORKING AREAS

Provinces	WKBPP	WKPP	PPS	PPM	PPL
1. North Sumatra	37	402	27	74	402
2. South Sumatra	53	854	21	106	854
3. West Java	183	1936	42	364	1936
4. Central Java	101	1713	63	202	1713
5. Jogyakarta	12	319	15	24	319
6. East Java	125	1105	62	250	1105
7. Bali	29	298	15	58	298
8. W.Nusa Tenggara	35	362	12	70	362
9. North Sulawesi	29	254	12	58	254
10. West Kalimantan	41	214	13	82	214
11. South Sulawesi	74	1057	38	148	1057
TOTAL	718	8514	320	1436	8514

WKBPP = Rural Extension Center Working Area
WKPP = Agricultural Extension Working Area
PPS = Extension Subject Matter Specialists
PPM = Senior Field Extension Worker
PPL = Field Extension Worker