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UNITED NATIONS INDUSTRIAL
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Distr.
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UNIDO/IOD.112
12 September 1977
ENGLISH

REPORT

CO-OPERATION PROGRAMME FOR COCONUT PROCESSING TECHNOLOGISTS
FROM DEVELOPING COUNTRIES HELD IN THE PHILIPPINES FROM
9 - 21 JULY 1977 ^{1/}

organized by the
United Nations Industrial Development Organization (UNIDO)
in co-operation with the
Asian and Pacific Coconut Community (APCC)

^{1/} The views expressed in this report reflect the discussions of the participants of the Co-operation Programme and do not necessarily reflect the views of the Secretariats of UNIDO and the APCC. The report has been reproduced without formal editing.

id.77-6785

A. THE PURPOSE OF THE PROGRAMME

1. Qualified coconut processing technologists from developing countries with practical experience in the coconut processing industry were given an opportunity to visit coconut processing enterprises in the Philippines that are actively engaged in the following coconut processing operations:

- (a) Copra production
- (b) Copra processing
- (c) Coconut oil refining
- (d) Coconut fibre processing
- (e) Associated coconut production
- (f) Coconut shell processing.

2. The participants were expected to review the relevant processing technologies in operation and enter into meaningful substantive discussions with the plant management and among themselves in order to exchange views on the specific aspects of the coconut processing industry that are of interest to all concerned.

B. ATTENDANCE AND PROGRAMME OF WORK

1. The Programme was attended by twenty four participants from twelve countries and international bodies like the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Industrial Development Organization (UNIDO) and the Asian and Pacific Coconut Community (APCC). The list of participants is given in Annex 1.

2. The UNIDO/APCC Co-operation Programme for Coconut Processing Technologists from Developing Countries opening session was held in Manila at the United Coconut Association of Philippines (UCAP) conference room on 10 July 1977. Mr. G.P. Reyes Jr., Director, APCC, and Mr. F. Aldaba, Deputy Administrator, Philippine Coconut Authority (PCA), welcomed the participants on behalf of APCC and the Philippine Government respectively. Mr. Horst Koenig, the UNIDO Officer in Charge of the Programme, in addition to welcoming the participants on behalf of UNIDO, briefed the participants on the objectives of the project as well as on the administrative matters

connected with the project. Mr. Leo Ignacio, Executive Director, United Coconut Association of the Philippines (UCAP), briefed the participants on the current situation of the coconut processing industries in the Philippines.

3. The details of the factory visiting tour which was the major substantive aspect of the Programme was outlined, explained and accepted (see Annex 2).

C. REVIEW DISCUSSION

The participants of the Co-operation Programme during the course and after their visits to the various coconut processing factories in the Philippines discussed a number of issues arising from the plant reviews and the implications to the coconut processing industries in their respective countries.

The following observations were made:

1. Copra

(a) The Group discussed the various methods of copra production in the coconut producing countries. In some countries drying operations are centralized, whereas in others coconut drying is decentralized. The Group agreed that it is difficult to say which system is more suited to any particular country, as these are dependent on a number of factors such as farm size, cultural practices, infra-structures and marketing system available, etc., and last, but not least, the socio-economic conditions prevailing in each country.

(b) The two traditional methods of copra drying, namely, (i) dehusking the nut, splitting the dehusked nut into two and drying, and (ii) splitting the nut with the husk, by means of an axe scooping the meat and drying (as presently practised in the South Pacific countries) were discussed. It was concluded that in the second method - scooping the meat directly out of the shell - considerable quantities of meat are left in the shell and therefore lost. Further, the meat is liable to contamination during the

various drying operations. Lastly, for the purpose of utilizing all parts of the coconut, particularly the husk and fibre, the Group stressed the need for countries using the "scooping" method to slowly change over to the first method, namely, dehusking the nut, splitting the dehusked nut, and drying.

(c) With regard to standard copra processing operations, the Group was not in favour of recommending a standard drier, but emphasized that individual countries should select the type of drier most suitable to their local needs and conditions. In this respect the APCC Secretariat was requested to make available to the member countries a list of various copra kiln designs, together with the manufacturing costs. These lists are to be circulated to all coconut producing countries for review and selection of the type of kiln suitable under their respective conditions.

(d) In order to improve the quality of small-holders' copra, the Group suggested a strategy which involves the establishment of copra production centres to be operated either on a co-operative basis or by the Government. The "centres" should be organized similar to those adopted by the Malaysian Rubber Development Co-operation which processes small-holders latex into crumb rubber.

2. Coconut Oil

(a) As a result of most of the oil millers' procedure to maximise oil extraction in the expeller process, the quality of the cake obtained is low. The cake is often burnt and dark in colour due to the heat that necessarily develops at high pressure for the maximum extraction of oil. The Group stressed the need for having optimum pressure/temperature conditions for obtaining both good quality oil and cake.

(b) In large-scale expelling plants where there are devices for separating extraneous matters such as iron, stones, etc., the frequency of damage to the expeller worms are less compared to mills which do not have this facility. Considering the mill shut-down time, cost of plant maintenance, labour lost hours, etc., the Group was of the opinion that the small oil millers should also consider the installation of devices for separating extraneous matters prior to feeding the expellers.

(c) One of the participants highlighted the loss of oil during storage in tanks by emulsification or formation of sediments. It was mentioned that this can be overcome by passing the expelled oil through a vibrating screen or use screening tanks where much of the foots are separated, considerably simplifying the filtration to follow.

(d) The Group further emphasized the need for

(i) continued research and development on the copra crushing technology

(ii) small-scale oil millers to regularly determine their plant efficiencies by working out the material balance via input and output of copra, oil and cake respectively.

(e) With regard to the solvent extraction of pre-pressed copra cakes the Group agreed that it is uneconomic to set up small solvent extraction plants (capacity less than 100 tons/24 hrs.). Large-scale solvent extraction plants should be operated on pre-pressed cakes from the same factory to assure a continuous supply of fresh uniform quality cakes for extraction. Some of the solvent extraction plants in the APCC member countries totally rely on outside supply of old pre-pressed cakes and can therefore not operate efficiently enough.

3. Desiccated Coconut

(a) The desiccated coconut industry, in fact, is directly competing with the coconut oil industry and the copra exporters with regard to raw material supplies. Coconut are either dried into copra for oil extraction or exported as copra, or processed directly into desiccated coconut products. A decision to establish either a desiccated coconut industry or a coconut oil milling industry would rest very much on the marketing aspects and price competitiveness of the final products.

(b) The Group noted the trials conducted in the Philippines to mechanize the paring operation. The manual paring operation proved to be cheaper than the mechanized paring process under test due to the following reasons:

- (i) High personnel accident rate
- (ii) High wastage in paring (12% loss in the mechanized process compared to 3% loss in the manual operation)
- (iii) Higher wages to be paid to the operators of the mechanical parers.

These results should, however, not be overestimated and/or generalized as the type of the mechanical paring process plays an important role in such evaluations. Further technological development work is urgently required in this field.

4. Shell Charcoal and Activated Carbon

(a) Shell Charcoal

- (i) The Group agreed that the techniques for making good quality coconut shell charcoal by the simple traditional methods of using 55 gallon drums or pits dug in the ground are well known to coconut farmers; however, to induce farmers to enter into small-scale charcoal production, in the first instances, depends on the market demand and marketing methods.
- (ii) To encourage development of shell charcoal production at the farm level, the Group stressed the need for either the respective Governments or coconut development authorities to set up co-operative systems to collect the small-holders' shell charcoal at their doorsteps to be taken to a central warehouse for local sales or for exports.

(b) Activated Carbon

Generally the Group concluded that due to lack of technical know-how on the production and marketing of activated carbon, this industry has not yet developed to the extent it should in coconut producing regions. In this respect the APCC Secretariat was requested to make use of the available services of UNIDO Headquarters in order to locate interested European and other parties who are willing to set up activated carbon plants in the coconut producing regions, either based on coconut shells or shell charcoal raw materials.

5. Coir Fibre

The Group stressed the need for coir producing countries to improve their processing methods by a combined process of indigenous development and imported technology. One method of importing advanced processing technology from developed countries is the possibility of technical collaboration between coir manufacturers in developed countries and their counterparts in coir producing countries. A close co-operation should be developed between the producers and users of coir in industrialized and developing countries.

D. ASSESSMENT OF THE PROJECT

The Group unanimously agreed that the UNIDO/APCC Co-operation Programme for Coconut Processing Technologists from Developing Countries was unique in its approach and implementation. This is the first time in the history of the coconut industry that processing technologists from various countries have collectively visited processing plants and exchanged experiences on the basis of the production processes seen and evaluated. It was highlighted that only by organizing similar programmes coconut technologists could improve their professional competence through collective discussions of day-to-day problems, thereby effecting the transfer of technology within the region. It was suggested that programmes of this nature be continued in view of the direct benefits which could be derived by coconut technologists and in the interests of the further development of the coconut industry of their respective countries.

E. ACKNOWLEDGEMENT

Mr. Horst Koenig expressed appreciation for the excellent arrangements and hospitality extended by the Philippines Coconut Authority on behalf of the Philippine Government for hosting the Programme. He also expressed gratitude to Mr. G.P. Reyes Jr., Mr. F. Aldaba and Mr. R. Maso, Deputy Administrator, PCA, for their participation in the Programme and their valuable contribution in the review discussions. Finally, Mr. Koenig, in expressing his thanks to the participants, stated that the Programme was a success due to the diligence and co-operation of each and every participant.

ANNEX 1

UNIDO/APCC TECHNICAL CO-OPERATION PROGRAMME FOR COCONUT
PROCESSING TECHNOLOGISTS FROM DEVELOPING COUNTRIES
PHILIPPINES, 9-21 JULY 1977

LIST OF PARTICIPANTS

<u>Country</u>	<u>Participants Address</u>
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WESTERN SAMOA	Mr. K. Ale Department of Agriculture Apia, Western Samoa

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<u>Country</u>	<u>Participants Addresses</u>
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UNIDO/APCC
 Technical Cooperation Program for Coconut Processing Technologists
 9-22 July 1977
 Philippines

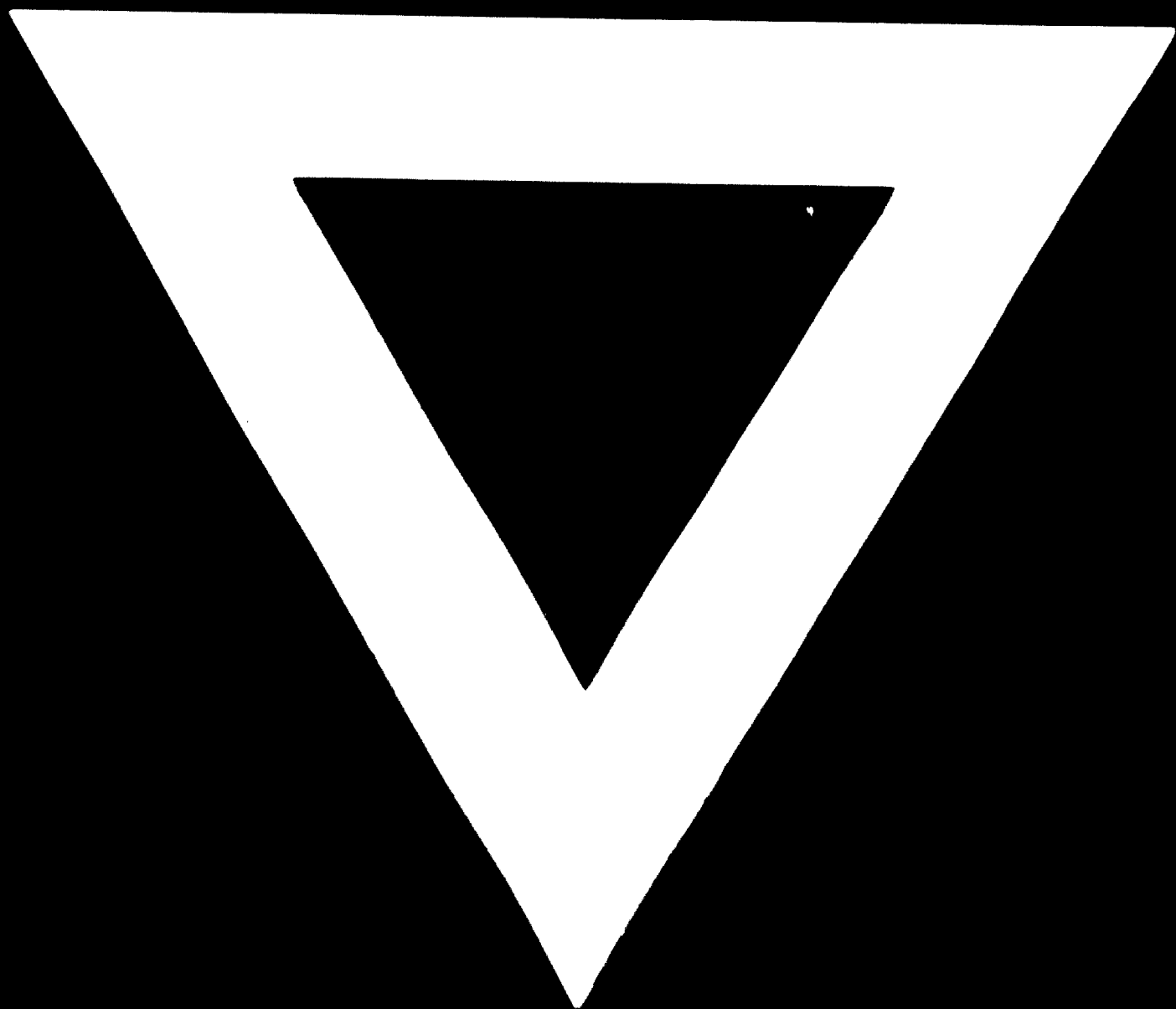
DATE	TIME	E V E N T S	REMARKS
1977 09 July Saturday	Whole Day	Participants arrive at Manila International Airport After customs and immigration clearance, participants proceed directly to Hotel Mirador.	
10 July Sunday	10.00 Hrs 12.00 Hrs 14.00 Hrs	Briefing/Instructions for Participants Lunch - Hosted by APCC at UCAP Briefing of participants on the Philippine coconut industry by UCAP Executive Director	Place of Briefing UCAP 941 J. Llanes Escoda
11 July Monday	08.30 Hrs 12.00 Hrs 14.00 Hrs 20.00 Hrs	Depart from hotel for tour of Procter and Gamble Philippine Manufacturing Company, Manila (oil crushing and refining) Lunch - Hosted by P & G PMC Continue P & G PMC tour (refined coconut oil products) Review discussions	PCA coaster provided
12 July Tuesday	07.00 Hrs 09.00 Hrs 10.30 Hrs 12.00 Hrs 14.00 Hrs 18.00 Hrs	Depart from hotel to start tour of Southern Luzon coconut processing plants Arrive at Philippine Coconut Authority Experimental Station, Alaminos, Laguna Tour of station; demonstrations on coconut harvesting, copra processing Depart from Alaminos for Lucena City Check in at Tourist Hotel Luncheon hosted by APCC Director Reyes Visit Red V Desiccated Factory Discussions with senior Red V officials follow Return to Tourist Hotel for overnight stay (30 min) Cocktail by JCC followed by dinner by Luzon University	PCA coaster provided

DATE	TIME	EVENTS	REMARKS
13 July Wednesday	08.00 Hrs 12.00 Hrs 14.00 Hrs 15.00 Hrs 18.00 Hrs	<p>Depart from Lucena City for Peter Faul Corporation at Candelaria, Quezon</p> <p>Plant tour and discussions on desiccating operations and coco food products manufacture with Peter Faul officials</p> <p>Lunch hosted by Peter Faul Corporation</p> <p>Depart from Candelaria for COIRFLEX Philippines at San Pablo City</p> <p>Plant tour and discussions on rubberized coir processing with senior COIRFLEX officials</p> <p>Depart from San Pablo City for Los Banos, Laguna</p> <p>Check in at Pook ni Mariang Makiling, Los Banos for overnight stay</p>	PCA coaster provided
14 July Thursday	08.00 Hrs 11.30 Hrs 12.30 Hrs 17.00 Hrs	<p>Proceed to FORPRIDECOM, Los Banos for tour and discussions on coconut timber processing with FORPRIDECOM</p> <p>Depart from Los Banos for Alaminos</p> <p>Lunch, swimming and relaxation at the Hidden Valley Springs Resort</p> <p>Depart from Alaminos for Manila</p> <p>Recheck into Hotel Mirador</p>	PCA coaster provided
15 July Friday	10.00 Hrs 12.00 Hrs 14.00 Hrs	<p>Review discussions and findings on tours of Southern Luzon coconut processing plants</p> <p>Lunch</p> <p>Guided tour of Metro Manila and environs</p>	UCAP Manila PCA coaster provided
16 July Saturday	Whole Day	REST PERIOD FREE for individual appointments	

DATE	TIME	E V E N T S	REMARKS
17 July Sunday	07.00 Hrs 09.10 Hrs 10.20 Hrs 11.30 Hrs 14.00 Hrs	Depart from hotel for Manila Domestic Airport Leave Manila by PAL Flight 151 for Cebu City Arrive Mactan International airport, Cebu City Check in at Hotel Diamond Skyview Guided tour of Cebu City and environs	PCA coaster provided Airconditioned coach provided Airconditioned coach provided
18 July	06.00 Hrs 11.00 Hrs 12.30 Hrs 14.00 Hrs 15.30 Hrs 17.00 Hrs	Check out and depart from hotel for University of San Carlos Plant tour of Coco Foods Pilot Plant and discussion of findings Early lunch Depart for Mactan International Airport Leave Cebu City for Davao City on PAL Flight 111 Leave Davao Airport for hotel Check in at Davao Imperial Hotel Briefing	Airconditioned coach provided Airconditioned coach provided
19 July Tuesday	07.30 Hrs 08.00 Hrs 12.00 Hrs 14.00 Hrs 16.00 Hrs	Depart from Davao Imperial Hotel for Philippine Coconut Authority Research Center at Bago-Oshiro Center tour and discussions with senior Center officials Lunch hosted by PCA Research Center Depart from Center for Durano Trading Tour and discussions on charcoal exporting with Durano officials Depart from Durano Trading Return to Davao Imperial Hotel	Airconditioned coach provided
20 July Wednesday	08.00 Hrs 11.30 Hrs	Check out and depart from hotel for Legaspi Oil Plant at Sasa Plant tour and discussions on copra bulk terminal and mechanized loading with senior Legaspi Oil officials Early lunch hosted by Legaspi Oil Davao	Airconditioned coach provided

DATE	TIME	E V E N T S	REMARKS
	12.30 Hrs 14.10 Hrs 15.40 Hrs 16.30 Hrs	Depart from Legaspi Oil for Davao Airport Leave Davao Airport for Manila on PAL Flight 116 Arrive at Manila International Airport Leave Airport for Hotel Mirador	PCA coaster provided
21 July Thursday	09.00 Hrs 17.00 Hrs	General review and assessment of Project Findings Dinner and Cultural Presentation hosted by Philippine Coconut Authority at the Manila Peninsula Hotel, Makati, Metro Manila	UCaP Manila PCA coaster provided
22 July Friday	whole Day	Departure of participants	

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