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Report on a mission to the  
Philippines to provide  
socio-economic inputs into  
the UK/RP Copra Quality Project

6th - 30th January 1992

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Project T0045

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## **Acknowledgements**

I am grateful to all at the Philippine Coconut Authority for their assistance in conducting the various surveys that have been necessary during the course of this project. Particular credit should go to Ms D Masa, Mr J Milla and the four Davao based CPRO's without whom this work would not have been possible.

## Glossary of terms and abbreviations

ARM	Aflatoxin related mold
BAI	Bureau of Animal industries
D'vapour	Copra dryer using semi-direct firing
Kukum	Copra dryer using indirect firing
NRI	Natural Resource Institute
NRI/Fyfe	Copra moisture meter designed by NRI and Fyfe Ltd
Pasa	Literally "pass" in reference to copra
PCA	Philippine Coconut Authority
ppb	Parts per billion (aflatoxin)
Resecada	"Dry" in reference to copra
Tapahan	Copra dryer using direct firing
UCAP	United Coconut Association of the Philippines
Urometer	Copra moisture meter designed by Dr Head
WHU	Waste heat unit

## **Introduction**

1. This report concerns a mission to the Philippines between 6th and 30th January 1992 (sixteen working days). An itinerary is at Annex I. The purpose of the mission was to provide socio-economic inputs into the UK/RP Aflatoxin in Copra Project final review, conduct preliminary market research into the concept of mechanical copra moisture meters, evaluate the initial impact of the recent nationwide copra quality improvement campaign, provide inputs into the on-going UK/Bureau of Animal Industries (BAI) sub project and to follow up the project impact monitoring exercise initiated during my last mission to the Philippines in July 1991.

2. Field trips were conducted to Cagayan de Oro, South Cotabato, Lanao del Norte and Davao (twice).

## **Summary and Conclusions**

3. An upsurge in coconut oil prices as a result of low ending stock in Europe and shortfall in Philippine supply has resulted in record farm-gate copra prices.

4. Rising copra prices are not conducive to on farm quality improvements.

5. The information campaign has been partially successful, but will not lead to improved copra quality until the incentive for drying copra to 12% moisture content is passed from the primary traders to the farmers. This will require the enforcement of the Administrative Order No 1 (AO 01 - see Annex II), the widespread availability of a cheap moisture meter and promotion of tapahan (smoke) drying.

6. Test marketing of three mechanical moisture meters showed a highly favourable response. Subject to minor design changes this technology is ready for dissemination.

7. A project impact monitoring survey was initiated in the Davao area. A proposed follow-up survey at the same time next year will indicate project success in getting its "quick fix" message to farmers.

## **Recommendations**

8. It is recommended that, subject to some minor modifications, the project seek local manufacturers for the Ulometer and UCAP moisture meters. Arrangements for implementation should include: preparation of appropriate user instruction in several Philippine languages, endorsement of the technology by the PCA and arrangements for marketing by PCA staff. No further market research is warranted at this stage.

**Action: Dr Head  
PCA**

9. A workshop to consolidate the findings of the project has been recommended. The attendance of the socio-economist at this event would be beneficial to the project.

**Action: J Disney  
B Bennett**

10. Further socio-economic inputs into project publications include sections of the final report (one person week) and preparation of Seminar and Workshop papers (one week). It is also recommended that funds be allocated for the completion of a publication on copra marketing (estimated two weeks).

**Action: J Disney  
B Bennett**

11. Liaison with KIT re integrated processing is recommended. This will require a brief (one day) mission to the Netherlands.

**Action: M Hebblethwaite  
B Bennett**

12. As part of the on-going post-project contact with the PCA and BAI it is recommended that every effort be made to repeat the aflatoxin campaign impact study currently being conducted in the Davao region at the appropriate time in 1993. This will play an important part in the assessment of the impact of the project and allow NRI to evaluate its inputs objectively.

**Action: J Disney  
B Bennett**

## **MAIN REPORT**

### **Aflatoxin reduction campaign**

13. The projects "quick fix" strategy of promoting smoke driers has been heavily promoted by a programme of meetings, publications and a poster campaign undertaken by the PCA. The impact of this programme was assessed.

14. Farmers and traders showed a keen awareness of the aflatoxin problem and related aflatoxin to mold growth. However, the message to encourage the use of tapahan rather than sun drying has either not got through or been ignored.

15. The amended administrative order (AO 01) making the trading of copra over 14% moisture content unlawful is not being implemented. None of the farmers interviewed were aware of it. Very few traders interviewed were aware of it. Of those that are, only one was implementing it in transactions between himself and farmers.

16. Traders able to sell directly to oil mills implementing AO 01 are buying wet copra (ie, anywhere between 14% and 22% moisture) under the pasa system (6% moisture basis) and selling to mills at around 8% moisture (or 4.6% premium under AO 01). This represents a considerable additional profit to traders.

17. Several large oil mills have produced extension literature (including Legaspi, Cargill and San Miguel). This should be encouraged, but efforts must be made to ensure that the messages contained in this literature are consistent with the findings and recommendations of the project.

18. New moisture criteria will not be implemented in transaction between traders and farmers unless sanctions are introduced such as the loss of trading licence. At present PCA staff are powerless to act.

19. The new 12% semi-resecada (dry) system is not fully understood even by PCA staff. Further consideration should be given to the way this message is transmitted. Very few people (including PCA staff) seem to understand how the traditional "Pasa" system works.

20. The project should seek assistance in designing and targeting current and future extension messages to ensure that these messages reach the target group (sun drying farmers in Southern Mindanao).

21. The general lack of price information among farmers exacerbates the situation. Farmers make trading decisions based upon traditional patron-client relationships rather than profit maximising criteria. Regular radio broadcasting of mill gate prices in the vernacular would be beneficial.

#### **Test marketing of moisture meters**

22. Individual and focus group interviews were conducted to test the concept and acceptance of three trial mechanical moisture meters (the "Ulometer", "UCAP" and "NRI/Fyfe"). A separate report on this activity is attached at Annex III.

23. All received a highly favourable response.

24. Traders and farmers were asked to rank the criteria most important to them. Accuracy was ranked first, followed by durability, ease of use and finally price. Both farmers and traders considered price to be the least important criteria for choosing a moisture meter.

25. Overall, the "Ulometer" was most successful, being considered most accurate and best value for money. The NRI/Fyfe meter was thought to be easiest to use and most robust.

26. A visual display of moisture content is preferred to a stop-go system. This might take the form of a number of lights or a dial.

27. The estimated initial market for meters is:

	<u>Units</u>
Existing SCFO's in Mindanao	1,147
PCA Coconut Development Officers	600
Traders (assume 10% of Philippines total)	4,000
<hr/>	
Total	5,747
<hr/>	

28. The potential market is much nearer 50,000 units (based on projected figures for SCFO's and the PCA estimate of the total population of traders).

29. Subject to some minor adjustments, the project should seek local manufacturers for both the Ulometer and the UCAP meter. Prospects for sales are good despite the failure of the new Administrative Order to force traders to reject copra with a moisture content above 14%.

30. Farmers, traders and oil millers would prefer the meters to be marked "approved by the PCA" and marketed by PCA staff. The PCA should consider the logistics of this undertaking.

31. Clear instructions for the use of the meters in several local languages should be prepared. A cartoon format would be preferable.

#### **Baseline survey of aflatoxin campaign**

32. A "light and late" style sample survey of traders and producers was conducted in Cagayan de Oro and Davao (see Annex IV, "Letter to Mr Arancon"). The rationale, terms of reference and guide-lines for conducting this were given in Annex I of my Back to Office report of June 1991.

33. These surveys were eventually completed in November and early December 1992. Unfortunately, sampling frames were not adhered to due to a lack of supervision. The information gathered is of interest to the project but is only indicative and cannot be used as the basis of any future evaluation of the project's impact.

34. The questionnaire was redesigned and tested during a second field trip conducted between 27th and 29th January. Arrangements have been made for the completion of the survey (see Annex IV). About a week will be required for analysis and reporting in UK. This will fall in March 1992.

### **Small and medium scale integrated coconut processing**

35. The PCA increasingly sees the development of village level integrated coconut processing plants as its long term cure for copra quality problems.

36. Existing World Bank funds and new assistance will be focused in this area. The Dutch Royal Tropical Institute (KIT) will be holding a workshop in the second half of 1992 to launch an initiative in this area. NRI should liaise closely on the development of any such technology.

37. Discussions were held concerning the PCA proposal to use World Bank funds to investigate the use of NRI Waste Heat technology. The PCA has received agreement from the World Bank to seek tenders for this work. They have been provided with a sample NRI contract and made aware of future changes in NRI charge rates.

### **Bureau of Animal Industries Sub-project**

38. Inputs were provided into the review of the progress of this project. Feeding trials are unlikely to start until March/April. No further socio-economic inputs in country are necessary. A week will be required to assist the feed technologist with the summary financial analysis. This will fall in the final quarter of 1992.

39. During discussions with hog raisers, farmers tentatively assigned a premium figure of P0.27 per kg to corn with guaranteed low levels of aflatoxin. This was derived as follows:

40. Based on a finished hog weight of 80kg (wet) and a feed conversion ratio of 3.3, a hog requires 264kg of mixed feed. It is assumed that approximately 68% of a typical hog feed is made up of corn (ie, 171.6 kg) with a high likelihood of aflatoxin contamination. Raisers are adding aluminium silicate compounds to hog diets to alleviate this risk at the rate of P0.66 per kg of hog (P46.2 per finished 80 kg hog). In order to avoid using the additive, farmers would therefore, be prepared to pay at least P0.27 per kg premium for corn with a guaranteed low level of aflatoxin. This represent about a 6% premium on Manila corn prices in October 1991.

### **Distribution**

A Marter, NRI	J Disney, NRI
J Coulter, NRI	D Cox, NRI
G Breag, NRI	P Daplyn, NRI
C Gay, NRI	D Trotman, SEADD
R Coker, NRI	I Watson, NRI
S Head, NRI	M Nagler, NRI
R Harris, NRI	
G Maier, University of Hohenhiem	

## Annex I: Itinerary

Date	Location	Action
7 Jan	Arrive Manila	
8 Jan	PCA	Preparation for review mission
9 Jan	PCA	Preparation for field trips
10 Jan	PCA	Preparation of surveys
13 Jan	Cagayan de Oro	Farmer interviews
14 Jan	Davao	Trader interviews Preparation for focus groups
15 Jan	General Santos	Farmer/trader interviews
16 Jan	Davao	Focus groups interviews
17 Jan	Davao	Trader interviews
20 Jan	Manila British Embassy	Project Review
21 Jan	BAI	Project Review
22 Jan	PCA	Preparation for presentation of project findings
23 Jan	PCA	Presentation of project findings
24 Jan	PCA	Preparation for field trips
27 Jan	Davao	Farmer and trader sample surveys
28 Jan	Davao	"
29 Jan	Davao	"
30 Jan	Manila	Report writing
31 Jan	Return London	

**Annex II: Administrative Order 01, 1991 (abridged)**

**Table 1**

41. This table should be applied to all copra with a moisture content of up to 12%. Copra with a moisture content in excess of 12% must be rejected, except for Tapahan dried copra as specified in Table 2.

Moisture Content (%)	Price Adjustment Factor A %	Moisture Content (%)	Price Adjustment FACTOR A %
7.0 and below	+5.7	10.0	+2.3
7.5	+5.1	10.5	+1.7
8.0	+4.6	11.0	+1.1
8.5	+4.0	11.5	+0.6
9.0	+3.4	12.0	0
9.5	+2.8		

**Table 2**

42. This table may only be applied to copra produced in a Tapahan dryer. Traders, certified by PCA, purchasing such copra must dry the copra immediately to at least 12% moisture.

Moisture Content (%)	Price Adjustment Factor A %	Moisture Content (%)	Price Adjustment FACTOR A %
12.0	0	13.5	-3.0
12.5	-1.0	14.0	-4.0
13.0	-2.0		

**Table 3**

43. This table gives the Grade and premiums/discounts to be applied to the level of moldy copra (ARM) in copra delivery.

Grade	Mold level (ARM)	Premiums/discounts FACTOR B
No.I	less than 1%	2% premium
No.II	1.1 to 10%	Zero
No.III	10.1 to 20%	2% discount
No.IV	more than 20%	4% discount

Table 4

44. This table gives the discount factor to be applied to the level if inferior (% by weight) in a copra delivery.

% inferior copra	% discount/FACTOR C
0 to 4	0
5 to 9	0.75
10 to 14	1.5
15 to 19	2.25
More than 20%	3.0

Table 5

45. This table gives the discount to be applied for the level of dust and foreign matter in a copra delivery.

% dust and foreign matter	% discount/FACTOR D
0	0
1	1
2	2
3	3 etc

**Annex III: Report on a marketing and impact survey 13-17  
Jan 1992 by D Masa, J Milla and C J Bennett<sup>1/</sup>**

**Introduction**

46. This report is divided into two sections. The first of these concerns the primary market research into the market acceptability of mechanical copra moisture meters. The second section investigates the impact of a campaign to encourage the production of improved quality copra using recommendations arising from the NRI/PCA Aflatoxin project.

**Section I: Report on the marketing of copra moisture meters**

**Introduction**

47. The Natural Resources Institute (NRI) and Fyfe UK Ltd have reached the final stages of the development of a cheap, robust, tamper proof electrical copra moisture meter (hereafter referred to as the NRI/Fyfe meter). Similar meters have also been developed by the United Coconut Association of the Philippines (UCAP) and by Dr Head of the UK/RP Aflatoxin project (the "Ulometer").

48. The traditional method of moisture determination in the Philippines is by breaking the copra. Copra below about 12% moisture content makes a distinctive "crack" noise.

49. It was proposed that during a mission to the Philippines (7th - 30 January 1992) a number of individual and focus group interviews be conducted in order to initiate research into the likely market for these three meters.

50. Qualitative market research was undertaken ie, in-depth interviews with end-users and focus group interviews.

51. The purpose of using this approach was to gather qualitative information about copra drying and the likely response to the introduction of an electrical moisture meter. At this early stage of product development useful information can be gathered by this method avoiding the expense of quantitative research.

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1/ D B Masa, a Food Technologist, and P D Milla, a Development Economist, work for the Philippines Coconut Authority, Manila. C J Bennett is a Socio-economist attached to the Marketing Research and Systems Section of the Natural Resources Institute, UK. This project was funded by the British Overseas Development Administration.

## Objectives

52. The objectives of the study were as follows:

- i. To test the concept of using mechanical moisture meters.
- ii. To gather feedback on the likely response to this technology by both traders (the primary market) and copra producers (the traders client group) with regard to:
  - . Likely market resistance to the technology.
  - . Reaction to and acceptance of a variety of designs, *modus operandi* and method of transmitting moisture information to the user.
  - . Identification of key market segments for these products with a view to possible further quantitative market research if warranted.

## Method

53. One example of each meter was given to 18 traders and farmers in the Davao area. These included four urban traders, five rural (primary) traders and nine farmers. Representatives of several farmers (SCFO's) groups were included in this sample. Random recruitment of respondents, though desirable, was not possible given the time-frame and resources available. Respondents were given around four weeks to get used to the meters and were requested to use them regularly.

54. A dual approach was adopted. Initially, individual in-depth interviews were undertaken using a semi-structured, pre-prepared list of questions. Subsequently, two focus group interviews were conducted to engender a more broadly based discussion of the concepts. These focus groups covered the following broad areas: traditional drying methods; traditional trading arrangements; method of operation of test meters; likes, dislikes, advantages and disadvantages of mechanical moisture meters; preferences; source of product; pricing; advertising and after sale service.

## Information gathered

### *Acceptance by key client groups*

55. Producers, primary traders and secondary traders all responded positively to the technology.

56. Farmers and traders were first interviewed individually to develop a feel for the language used to describe the meters. Four key criteria were identified

which were most important to the client groups. The groups were then asked to rank these criteria in order of preference and to gauge the three meters against them.

57. Both farmers and traders selected the following criteria in the following order:

First - Accuracy

Second and third - Durability and ease of operation

Last - Price

58. Durability and ease of operation were ranked so closely in all cases so as to be interchangeable.

59. All those interviewed agreed that price was the least important criteria for selecting a moisture meter. Therefore, the criteria "value for money" was introduced as a more accurate reflection of intrinsic value.

60. The farmers and traders were asked to rank the three meters against these criteria. The results are presented below in tables 1 and 2.

61. Overall, the Ulometer was considered the first choice because of its perceived accuracy (it clearly shows the moisture content as a percentage) and great value for money.

62. The NRI/Fyfe meter was ranked second as being most robust and easiest to use. It fared considerably better than the UCAP meter on value for money despite costing more than twice as much.

Table 1: Village Traders Ranking of three types of moisture meters

Criteria	UCAP	NRI/Fyfe	ULOMETER
VALUE FOR MONEY	3	2	1
ACCURACY	3	2	1
DURABILITY	2	1	3
EASE OF OPERATION	1	2	3
OVERALL	3	2	1

Table 2: Farmers Ranking of three types of moisture meters

Criteria	UCAP	NRI/Fyfe	ULOMETER
VALUE FOR MONEY	3	2	1
ACCURACY	3	2	1
DURABILITY	3	1	2
EASE OF OPERATION	3	2	1
OVERALL	3	2	1

Nb: The figure "1" denotes first choice

63. The UCAP meter was more popular with traders than with farmers. Farmers considered it the least durable and the hardest to operate.

*Specific comments on meters*

64. The Ulometer was not considered tough enough and several of the test meters had sustained damage. The strength, length and gap between the probes were considered important. The probes on the Ulometer were too thin and too long making regular use dangerous (a high probability of injury) and reducing life expectancy. The probes on the NRI/Fyfe meter were considered too short and too far apart. Most respondents likes the probes on the UCAP meter.

65. **Recommendation:** The mounting of the probes on the Ulometer will require strengthening for regular use. Probes on the NRI/Fyfe meter should be longer (able to penetrate through the copra) and slightly closer together.

66. Several respondents expressed a fear that rodents endemic in copra stores would damage the wires of the Ulometer.

67. **Recommendation:** Stronger wires should be considered for the Ulometer.

68. The shape of the NRI/Fyfe meter was considered a good selling point and many described it as "handy". Several of the NRI/Fyfe test meters had broken battery covers and this should be strengthened. The UCAP meter tends to slide apart when used vigorously and should be more securely fastened in its case.

69. **Recommendation:** The battery covers on the NRI/Fyfe and UCAP meters should be strengthened to withstand repeated use.

70. Several traders asked for the Ulometer to be fitted with a strap for carrying during prolonged use.

71. The nature and style of read-out was the subject of lengthy discussions. Clearly all parties prefer a read-out which gives actual moisture content accurately to about 0.5 percentage points. As might be expected, this view was expressed strongly by traders who felt that accuracy was necessary for the maintenance of profit margins. Farmers were less concerned, but would prefer an actual moisture reading given the choice.

72. There was a clear preference for three led lights (NRI/Fyfe meter) over two LED's (UCAP meter) and several interviewees asked for more lights to be included.

73. Some farmers claimed to have trouble reading the LED's in bright sunlight. They were also concerned that the "bubbling" effect caused by incomplete contact between the plastic casing and the resin compound surrounding the LED's was a result of deterioration of the product.

#### *Modes of operation*

74. The current high price for copra, resulting in poor quality standards, was not conducive to operational testing of the meters.

75. Traders generally agreed that the main use of the meter at present (in the absence of any strict quality controls) would be for arbitration between themselves and oil mills or larger traders. In some cases, traders considered that they could use it to show farmers how bad their copra is.

76. Many traders own or have access to the "Brown & Duval" method of testing for moisture in copra. They consider this method slow and inaccurate and would much prefer a mechanical moisture meter.

77. **Recommendation:** Speed and ease of use are important selling points for mechanical moisture meters.

78. Farmers would like to have access to moisture meters through their coconut farmers organisations or local government bodies. They would also use the meters for arbitration.

79. **Recommendation:** Meters should be distributed among PCA extension staff and demonstrated to farmers groups and traders.

80. Respondents were happy with the idea of testing ten cups per sack of copra but considered twenty cups to many (ie, too time consuming). Few traders interviewed sample copra at present. Unless trading conditions change drastically, users are unlikely to practice elaborate sampling protocols.

#### *Price*

81. As mentioned above, price was considered the least important criteria in choosing a meter. Traders agreed that a range between P300 and P1000 was very acceptable and would present them with no problems.

82. Surprisingly, farmers had similar views, though they would expect to purchase the product communally and share in its use. Farmers observed that they only harvest copra four times a year and would not get much use out of an individual meter. This is another sound reason for communal use.

83. Farmers were concerned about the number of batteries the meters would use as these are expensive in rural areas.

84. **Recommendation:** Suggested prices of P350 (UCAP) P650 (Ulometer) and P1000 (NRI/Fyfe) were considered very acceptable. Traders in particular are prepared to pay more for greater accuracy and strength.

#### *Point of sale*

85. Farmers and traders would prefer to buy the product from a PCA official and requested that they be officially sanctioned. This reflects a need for recognition of the accuracy of the meter by both buyers and sellers of copra.

86. **Recommendation:** The PCA should test and authorise all copra moisture meters to ensure accuracy and quality control. PCA staff should be authorised to retail moisture meters on a non-profit making basis.

#### *After sale service*

87. Traders were unconcerned about after sale service or guarantees. Many described the meter as a disposable item which they might expect to last a couple of years before needing replacement.

88. Farmers only saw a need for after sale service for the Ulometer, which was considered more fragile than the rest and therefore more likely to require repair.

## *Advertising*

89. Promotion of the meters should be through use by PCA staff and radio advertisement. Radio is the only medium likely to reach a significant number of farmers and traders.

## *Follow-up activity*

90. **Recommendation:** A marketing plan should be drawn up, using this report as a basis, to ensure that product availability, distribution and promotion are coordinated.

## **Conclusions**

91. Subject to a few minor design changes, all the moisture meters tested are ready for marketing.

92. Overall, the Ulometer was the most successful product being considered most accurate and the best value for money. The NRI/Fyfe meter was considered easiest to use and most robust.

93. An indication of actual moisture content is preferred to a "stop-go" read-out system.

94. The meters are subject to severe strain in use. Intrinsic strength is an essential design element.

95. Clients would like to hear of the meters through the radio and to buy them from representatives of the PCA. The meters should be marked "PCA Approved" and marketed through PCA staff.

96. Instructions for using the meters should be drawn up in the vernacular (Tagalog and Visayan are suggested initially) in the simplest possible form.

## **Section II: Report on the initial impact of the Copra Quality Campaign**

### **Objectives**

97. The objectives of the campaign were as follows:

1. To reduce aflatoxin levels in copra and copra products;
2. To inform/educate the copra producers/traders of what causes aflatoxin;
3. To encourage/implement proper and effective methods of drying, to improve the quality of copra;
4. To relatively uplift the welfare of the coconut farmers;
5. To produce copra meal whose aflatoxin level is acceptable in the European market.

### **Methodology of the survey**

98. Prior to the survey, an information dissemination campaign was launched. This campaign advised farmers and traders on what causes mold attack and how to avert it. The use of traditional Tapahan drying was advocated in conjunction with a new copra classification scheme based on premium rather than discounts for dry copra.

99. To evaluate the impact of this new copra classification scheme, a randomly selected sample of farmers, traders were interviewed with regard to their opinions/comments on the said program. An oil miller (Cargill) was also consulted.

100. Structured and semi-structured interview methods were used by the moderators.

101. Group discussions were also conducted among randomly selected key informants, both traders and farmers.

102. Regions covered were Cagayan do Oro, Davao and South Cotabato. These are the areas which have been shown to be most prone to aflatoxin contamination.

### **Results**

103. In the areas visited, centralised drying is relatively prominent in Cagayan de Oro, a system where copra producers use a single communal tapahan (direct smoke dryer). The groups interviewed in Davao and South Cotabato commented that their drying processes vary with the season. During dry months, the method is sun-drying, while in rainy seasons, it is tapahan.

104. Moreover, the copra producers added, that they even combine the two, ie, smoke drying for several hours and sun drying for 2-3 days.

105. Traders interviewed claimed that the proportion of copra coming into their bodegas (stores) are:

Smoke dried = 60-70%

Sun dried = 40-30%

106. The majority of the parties involved, ie, traders and copra producers have a relatively clear understanding of what causes aflatoxin contamination, importance of why it should be contained and its prevention. They got such information from the PCA field-staff, traders, oilmillers and on some posters. The most effective medium for transmitting such information appears to be copra traders.

107. It is generally felt that copra quality has slightly improved during the period of the information campaign. Copra is still being purchased by the traders via the "pasa" system, ie, the moisture content is not given much priority as long as the appearance is relatively acceptable based on the traders standard through ocular inspection and cracking sound of the copra when it is squeezed, hence, no premiums are offered.

108. In the "pasa" system, traders buy wet copra (18-22% moisture content) based on the old system (6% moisture content) and give discounts, dry them and sell them to the oil millers on the new copra classification, where the former are now being offered premiums under the AO 01.

109. Traders interviewed reported that about 5% of the copra bought in by the farmers are rejected. No traders rejected on the basis of moisture content due to high market demand and low supply. Copra goma (immature copra) is currently the main cause of rejects.

110. According to the traders, oilmillers don't have preferences on whether copra they procured from the former are sun-dried or smoke-dried.

111. The team heard of no cases where traders/farmers were penalized for trading illegally above 14% moisture content.

112. The presence of a mechanical moisture meter would help the traders gauge the moisture content of their copra inventories before it is brought to the oil millers.

### Conclusions

113. The aim of the Aflatoxin Reduction Program (ARP) is to save the European market through the prevention of aflatoxin contamination in copra cake/meal. The latter can

be achieved through the strict implementation of the new copra quality campaign. Presently, as gathered from the survey, copra producers are not given any premiums especially if they bring in good copra. Trading is through the "pasa" system, ie, they are priced uniformly whether their copra has high quality or not. With this scenario, the farmers prefer a wet copra (with a heavier weight) than a dry copra (with a lighter weight), hence, yield a poor quality copra.

114. Moreover, the dismantling of the "pasa" system would be difficult since the most of the copra producers are indebted to the traders.

115. As previously mentioned, traders capture the quality premium by buying under the traditional system and selling under the AO 01. The real step is to move the premium to the farmers by implementing AO 01.

116. For the traders, they are insistent that the new classification system be religiously enforced, ie, prohibiting the purchase of sun-dried copra with more than 12% moisture content and/or smoke-dried copra with more than 14% moisture content. However, based on the present market environment of low supply where some traders buy copra above 14%, any trader who followed the new system would probably become bankrupt.

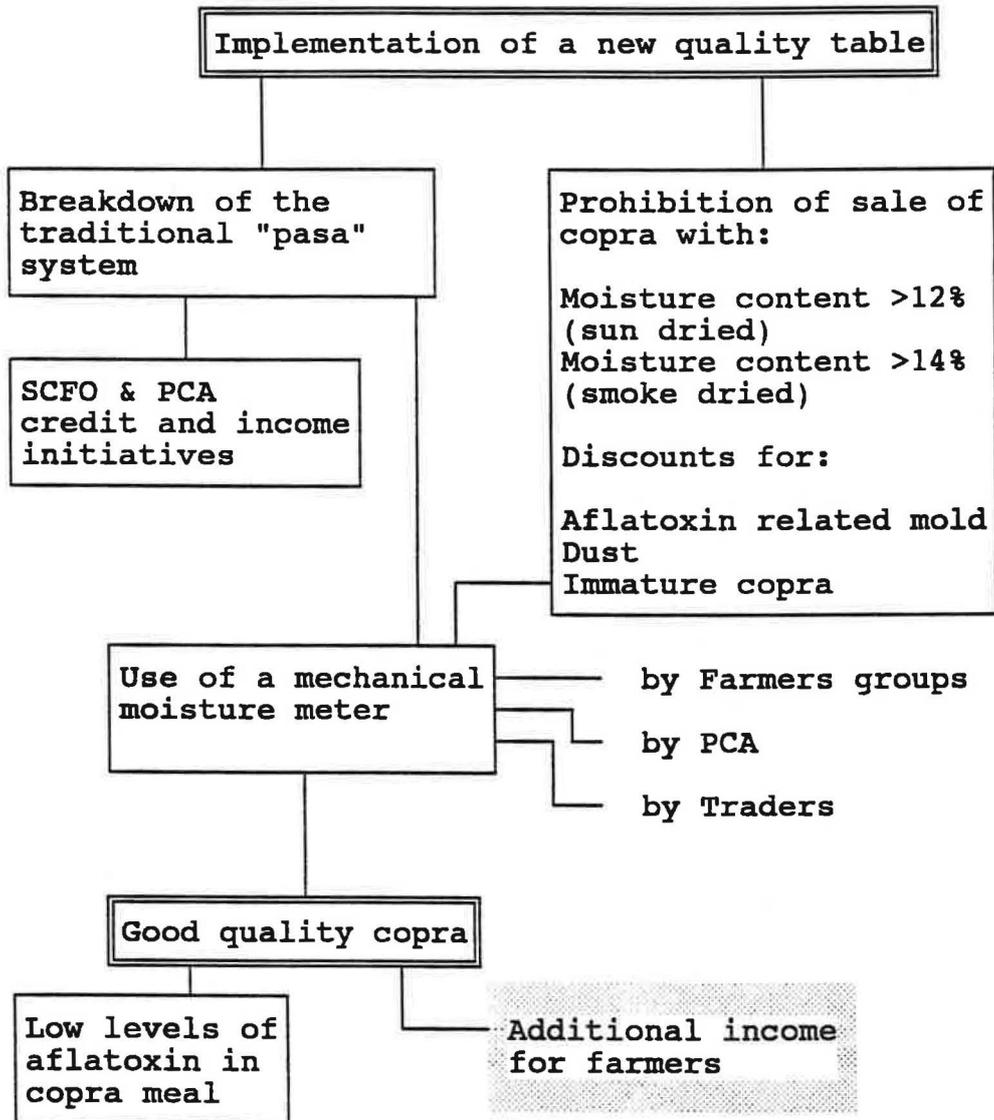
117. Hence, it is essential that the new copra classification be strictly followed by the copra producers, traders and oil millers.

118. A graphical presentation of the projects strategy is given at figure 1.

**Figure 1: The NRI/PCA "quick fix" strategy**

1. Objective - Saving the European market for copra by-products

2. Method



3. Goal - Prevention of aflatoxin contamination in copra meal/cake

**Annex IV: Letter to Mr Arancon**

Natural Resources Institute  
Chatham Maritime  
Chatham  
Kent  
United Kingdom

29th January 1992

Mr R Arancon  
Regional Director  
PCA Davao Office  
Davao City  
Philippines

cc: M Nagler, NRI  
S Head, NRI  
Dr Trinidad, PCA  
J Disney, NRI

Mr Arancon

**Arrangements for continuation of the Copra quality monitoring survey**

1. Further to our conversation of 24th January the following elements of the two surveys which make up the monitoring exercise have been completed:
  - . Re-design of questionnaires (examples attached)
  - . Briefing of enumerators
  - . Setting of survey areas
  - . Identification of sampling frames and protocols
  - . Testing of both questionnaires
2. Having set this activity in motion I would be grateful if it could be completed along the following lines:
  - i. Identical farmer sample surveys to be conducted in Tampakan and Talikud using a 20% sample chosen randomly from the "Master-list" of the Department of Agriculture. It is important that this be completed before the current extended period of sunny weather ends.
  - ii. NRI to be provided with the total number of farmers in the sampling frame and the list of names of those interviewed.
  - iii. Trader surveys to be conducted for at least three hours at two primary traders one morning a week for a

further three weeks. Cooperating traders (four) have been identified at Santa Ana and Calinan during this mission.

3. To facilitate the progress of this survey, the CPRO's should be given access to the Landrover (so long as this does not interfere with essential on-going copra survey work).

4. For my part I will undertake to provide you with a summary of the findings of the survey before June 1992.

5. I should stress that this is a "base-line" or "benchmark" study meant to indicate the current copra quality position for the minimum possible cost to PCA. This exercise will only be useful if it is repeated using identical sampling frames at the same places and times next year. By that time it is our hope that the various efforts by the PCA to overcome the problem of aflatoxin contamination will have born fruit.

6. I would like to take this opportunity to praise the excellent assistance provided by your staff during this mission. Specifically, the Davao based CPRO's (Messrs Laurente, Cabillan, Prieto and Ceniza) have proved invaluable.

Yours Sincerely

Ben Bennett  
Senior Research Officer  
29th January 1992

**COPRA QUALITY: MONITORING SURVEY - PRODUCERS**

Code No: \_\_\_\_\_

1. Name and address of farmer \_\_\_\_\_
2. Date and time of interview    \_\_/\_\_/\_\_    \_\_\_\_\_
3. Current mill gate price at nearest mill (Pesos) \_\_\_\_\_  
 Name of mill: \_\_\_\_\_
4. Who made this copra? Farmer/owner (receives 100%) [ ]  
 Contractor (receives x %) [ ]  
 Labourer (receives wage) [ ]
5. What type of drying are you practicing at the moment?    Sun [ ]  
 Tapahan/d'vapour [ ]  
 Kukum [ ]  
 A combination [ ]
6. Do you own a drier? Yes [ ]  
 [If yes go to 8., if no go to 7.] No [ ]
7. Do you have access to a drier (ie, to borrow or rent)? Yes [ ]  
 No [ ]
8. What type of drier do you have, own or have access to? Direct (tapahan) [ ]  
 Indirect (d'vapour) [ ]  
 Other (specify) \_\_\_\_\_
9. How old is the drier (years)? \_\_\_\_\_
10. What is the driers capacity (whole nuts)? \_\_\_\_\_
11. If you are sundrying under what conditions is it done? On tarmac [ ]  
 On earth [ ]  
 On a platform [ ]
12. How many days do you sundry for? \_\_\_\_\_
13. How many hours do you tapahan dry for? \_\_\_\_\_
14. What general discount/premium do you receive for your copra (%)?    Minus/Plus (delete as appropriate) \_\_\_\_\_
15. Where is your copra marketed? \_\_\_\_\_
16. Do you have now or have you had a credit relationship with this buyer? Yes [ ]  
 No [ ]
17. What price per kg did you receive (after discounts/premium)? P \_\_\_\_\_
18. When was that?    \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_

**COPRA QUALITY MONITORING SURVEY - FIRST POINT OF SALE**

1. Name and address of trader \_\_\_\_\_  
\_\_\_\_\_
2. Date and time of transaction                    \_/\_/\_\_\_
3. Name and address of seller \_\_\_\_\_  
\_\_\_\_\_
4. Status of seller:   Owner                        [ ]  
                          Tenant                                    [ ]  
                          Labourer                                [ ]
5. Number of bags: \_\_\_\_\_
6. Total net weight (kg): \_\_\_\_\_
7. Selling system:    Pasa (6% resecada)                [ ]  
                          AO 01 (12% resecada)                [ ]  
                          Other (specify)                        [ ]
8. Deduction/premium (delete as appropriate)  
ie, (100/net weight x kg deducted) \_\_\_\_\_
9. Price received by seller (Pesos per kg)  
ie, total value divided by net weight \_\_\_\_\_
10. Buyers resecada price ie, 6% (Pesos per kg) \_\_\_\_\_
11. Current mill gate price (Pesos per kg) \_\_\_\_\_
12. Type of copra:    Sundried                                    [ ]  
                          Smoke dried                                [ ]  
                          Combination                                [ ]
13. Did the trader sample the                        Yes                        [ ]  
copra?                                                        No                        [ ]
14. Does the seller have a                            Currently                        [ ]  
credit relationship                                    In the past                        [ ]  
with the trader?                                        None                                [ ]
15. MC sample (20 from one sack)  
  
\_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_
16. Average actual MC \_\_\_\_\_

## **Annex V: Design of monitoring survey**

### **Producer survey**

119. A sample survey of farmers was conducted in one Barrio (village) "Purok" in the Barangay (District) of Tagakpan. The sampling frame consisted of 62 farmers from which a random sample of 20% (12) was drawn. This frame was drawn from the 1990 "Master list of farmers" conducted by the Philippine Department of Agriculture. This list contains basic information about all Filipino farmers. A number of visits were made to the Barrio until all the farmers identified by the random sample could be traced and interviewed.

120. A similar survey is planned for two further villages in the Southern Mindanao. These additional villages, Talikud on Samar Island and Tampakan in South Cotabato, were chosen because they are known to be areas where a high incidence of sun drying occurs.

### **First point of sale survey**

120. Four primary traders were identified in two areas known to be prone to sun drying. Approximately four hours were spent with each trader, interviewing and sampling every farmer arriving. This will be repeated once a week for the period of one month during the dry season.