



**FOOD RESEARCH
INSTITUTE**

'SUSTAINABLE INDUSTRIAL MARKETS FOR CASSAVA' PROJECT

FINAL REPORT ON PROJECT OUTPUT 1.3.1

TRAINING WORKSHOP ON THE PRODUCTION OF HIGH QUALITY CASSAVA FLOUR AND GLUCOSE SYRUPS



By

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The training workshop on the production of High Quality Cassava Flour and Glucose Syrups was organised within the framework of the DFID Funded project on ‘Sustainable Uptake of Cassava as an Industrial Commodity’. The need for the workshop was precipitated by the realisation that the uptake of technologies developed under the project - to access new markets for cassava and improve the livelihoods of rural farmers and processors - can only become a reality if industrial entrepreneurs are adequately trained to use these technologies and to appreciate the financial benefits of taking up these technologies. The principal objective of the workshop was to introduce the technology, equipment requirements/maintenance and the profitability of High quality cassava flour and glucose syrup production, to entrepreneurs who have the potential of incorporating these processes in their commercial operations. The workshop, which was conducted over a period of two days, involved lectures, demonstrations, practical sessions, workshop evaluation and presentation of certificates. A total of twelve participants - three females and nine males - drawn from seven private sector organisations, one private individual and one government institution, attended the workshop. Resource persons were sourced from the Food Research Institute (Ghana), The National Board for Small-Scale Industries (Ghana), and the Animal Research Institute, Ghana. At the end of the workshop, participants individually assessed various aspects of the workshop on a 7-point scale ranging from extremely poor to excellent. General organisation of the workshop was scored 5.9 (very good), Sample exhibits-6.3 (very good), course content-5.9 (very good), course presentations-5.9 (very good) and practical sessions-6.5 (very good to excellent). All participants were presented with a certificate of participation.

ACKNOWLEDGEMENTS

- UK Department for International Development (DFID): for providing the funding for the project as a whole and the workshop in particular.
- Crop Post-Harvest Programme (CPHP) of the Natural Resources International, UK: for providing the administrative framework for administering the funds, and monitoring the project as a whole and the workshop in particular.
- The Food Research Institute, Accra: for providing the local resources needed to facilitate the project as a whole and the workshop in particular.

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INTRODUCTION

The search for new markets for cassava led to the development of a number of technologies that add such value to cassava as to make it a dependable industrial raw material. These technologies include, technologies for the production of high quality cassava flour as a raw material for the production of bakery products, technologies for the production of cassava flour-based paperboard adhesives, technologies for the development of cassava flour-based glucose syrups and the production of cassava flour based plywood adhesives. Adequate training in the application of these technologies is a necessary pre-requisite to their uptake by the relevant industrial concerns. It is in the light of this that funding was sought within the context of the DFID-funded project on ‘Sustainable uptake of cassava as an industrial commodity’ to train potential entrepreneurs and industrialists in the technologies mentioned. The training workshop being currently reported on was limited to training in the production of High quality cassava flour and glucose syrups. The objective was to introduce to participants the principles and production practices underlying the production of these two products, the equipment requirements and the profitability of the two processes. The workshop which was organised from the 8-9th May 2003, at the Fishery Resource Centre of the Food Research Institute, was formally opened by Dr. W.A. Plahar, Director of the Food Research Institute.

OPENING ADDRESS

By

Dr. W.A. Plahar, Director, Food Research Institute

Ladies and Gentlemen, you are very welcome to this training workshop. As you may all have been aware, cassava is a key food security crop in Ghana, and is important to low-income farmers, because it provides reasonable yields on marginal soils with few inputs, even under drought conditions. Since 1995 cassava surpluses have steadily increased from 2 to 3.5 million metric tonnes in 2001. Needs assessment studies carried out in 1994 highlighted farmers' concerns to expand market opportunities for cassava and improve producer prices. The realisation of this need led to a series of studies since 1999 by the Food Research Institute, The Natural Resources Institute of the the UK and other Ghanaian institutions under the DFID/CPHP research programmes to explore alternative markets for cassava and develop products to satisfy these markets. These studies have demonstrated that market opportunities exist in Ghana that would enable cassava to contribute significantly to poor people's livelihoods. The markets include the paperboard industry, the plywood industry, the textile industry and the Food and Beverage industry amongst others. Products identified to have the most potential in these markets were , high quality cassava flour for bakery products, cassava flour-based paperboard adhesives, glucose syrups and industrial alcohols. Significant research effort has gone into developing these products to meet the local demand. The key to sustaining the market however is the establishment of an integrated supply chain to provide manufacturers with an assured supply of consistent quality cassava products at a competitive price.

In line with the above, the current project 'Sustainable uptake of cassava as an industrial commodity' was formulated with the focus of developing an integrated supply chain from producer to end-user, that will promote industrialisation of cassava and lead to improvement in rural livelihoods.

The purpose of this training workshop is to introduce industrialists and other potential entrepreneurs to:

- the processes of manufacturing high quality cassava flour and glucose syrups from cassava flour and cassava starch,
- the economics and profitability of high quality cassava flour and glucose syrup manufacture,

and to discuss with participants, potential hindrances to the industrial uptake of these technologies, how to offset these and speed up the industrialisation of cassava, and their individual interests in taking up these technologies.

The selection of participants has been very carefully done and restricted to only those entrepreneurs with the highest potential of taking up the technologies, hence the very limited participation. It is my hope therefore that you would find the training not only very educative and challenging but also as one that would have equipped you to expand your product base and generate more income for your respective organizations. On this note I would like to declare the workshop formally opened. I wish you well in all your deliberations.



The Director of the Food Research Institute, Dr W.A. Plahar, delivering his opening address.



Group Photograph of workshop participants, some resource persons and management staff of Food Research Institute.

LECTURES

Below is an outline of the various lectures given during the training workshop:

1st Lecture: Production and Quality Requirements of Glucose Syrup: By Mr. Nanam Tay Dziedzoave

Topics covered included:

- Preparation of malted cereal
- Conversion of of HQCF into glucose syrups
- Quality Requirements of Glucose syrup and factors impacting on quality

2nd Lecture: Production and Quality Requirements of HQCF: By Mr. Nanam Tay Dziedzoave

Topics covered included:

- HQCF Production process
- Quality specifications
- Plant sanitation and Personal Hygiene

3rd Lecture: Equipment Requirement and General Maintenance: By Mr. Cletus Gyato

Topics covered included:

- Types of equipment, capacity and source
- Equipment operation
- Equipment maintenance

4th Lecture: Economics and profitability of Glucose Syrup Production: By Mr Godwin Amelekey

Topics covered included:

- Product market
- Projected cost estimates
- Expected Revenue
- Financial and Economic Feasibility

5th Lecture: Economics and Profitability of HQCF Production: By Mr. E. O. Boateng

Topics covered included:

- Production levels and costs
- Sales revenue
- Financial Viability
- Potential Markets

Details of the content of these lectures can be found in the documents Training Manual on the production of High Quality Cassava Flour and Training Manual on the production of Glucose syrups – which are training manuals prepared under the project. The full references can be found at the end of this report.

The plates below are a pictorial representations of the lecture presentations during the workshop.

LECTURES



Mr. E.O. Boateng, NBSSI, delivering his lecture.



Mr. Nanam Tay Dzedzoave, FRI, delivering his lecture.



Mr. Cletus Gyato, FRI, delivering his lecture.



Mr. Godwin Amelekey, ARI, delivering his lecture.



Workshop participants at lectures

DEMONSTRATIONS AND EXHIBITIONS

During the first day of the workshop an exhibition of the initial, intermediate and final products in the production of High quality cassava flour and glucose syrups was mounted. Participants were taken through the various processes and products; and explanations given on the different samples exhibited. Samples exhibited included intermediate and final products from:

- The production of HQCF from cassava chips.
- The production of HQCF from cassava grates.
- The production of rice malts
- The production of glucose syrups

The exhibition in pictorial form is presented below.



Above: Mr Nanam Tay Dziedoave explaining a point about the exhibits to participants.

Below: Product outputs from participants' practical sessions.

PRACTICAL SESSIONS

Participants were divided into two groups to undertake the practical sessions. Each group followed the guidelines provided in the draft training manuals to produce the high quality cassava flour and then the glucose syrup. The pictures below show the participants undertaking their practical sessions, under the guidance of the resource persons.



Workshop participants preparing to start practical sessions



Workshop participants dewatering grated cassava mash.



A workshop participant placing a tray full of disintegrated cassava in a cabinet dryer.



Workshop participants adding sodium metabisulphite to evaporating saccharified cassava flour.



Workshop participants packaging high quality cassava flour.



Workshop participants weighing out quantities of raw material inputs for glucose syrup production.



Workshop participants transferring glucose syrup into a bottle.



Workshop participants spreading disintegrated cassava mash in readiness for drying.

GENERAL DISCUSSIONS

The following were some of the questions the participants raised during discussion time.

Q. Some amount of CN is pressed out in the grating method of making high quality cassava flour. How does one get rid of this CN in the other method where there is no pressing out of liquid ie the chipping method.

A: The type of cassava grown in Ghana has low cyanide levels. Besides hydrogen cyanide is highly volatile so the heat applied during drying allows it to evaporate hence does not cause any threat to health in individuals.

Q. How can one discharge the liquid waste from the pressed cassava effectively into a soak away since this blocks the soak away with time.

A: There should be a design to collect the starch before discharging the water to avoid the starch accumulating and caking under the soak away.

Q. Why does one have to allow the product to cool in the dryer for some time after drying before bringing the product out?

A: When samples are packaged without prior cooling, evaporating moisture from the sample later condenses in the package and affects the shelf-life of the product.

Q. What does one do to reduce the vibrations caused by some of the machines during processing?

A: Machines must be installed on absorbable materials.

Q. Most farmers do not understand the kilogramme / tonne system of measurement. How can one standardise the buying of cassava with regards to measurement?

A: One may have to carry the scale to the farm to be able to weigh the cassava. However, it would be time wasting should one try to put every bit of the cassava on the scale. There should therefore be standardised baskets to a known weight to be used in weighing the cassava.

Q. Yellowish liquid is normally expelled from the grated cassava during pressing. This process is absent when the cassava is chipped and dried. Does this yellow liquid impact negatively on the flour produced from chipped cassava?

A: This is the cause of the yellowish tint observed in the flour produced from the chips as compared to that produced from the flour. Refer to the sample exhibits.

Q. One major problem of the glucose syrup production is the filtration process. What is being done to ease this process?

A: There is research going on currently to find out the best way of filtering the sample after saccharification.

WORKSHOP EVALUATION

At the end of the workshop each participant was given a workshop evaluation form, as shown in Appendix VI, to assess various aspects of the workshop. Participants were required to score each activity of the workshop on a seven-point scale as follows:

Level of Assessment	Score
Excellent	7
Very Good	6
Good	5
Fair	4
Poor	3
Very Poor	2
Extremely Poor	1

Below is a summary of the overall assessment of the workshop by participants.

Summary of overall assessment of workshop by participants

a. Scoring of Workshop Activities

Item Being Evaluated	Overall Score
General Organisation	
Registration of Participants	5.6
Welcoming of Participants	5.6
Opening Address	5.3
Group Photograph	5.9
Sample Exhibits	6.3
General Discussion	6.4
Lunch	6.1
Coffee Break	6.2
Course Content	Overall Score
<i>1st Lecture</i> : Production and Quality Requirements of Glucose Syrup.	6.7
<i>2nd Lecture</i> : Production and Quality Requirements of HQCF.	6.2
<i>3rd Lecture</i> : Equipment Requirement and General Maintenance	5.7
<i>4th Lecture</i> : Economics and profitability of Glucose Syrup Production.	5.4
<i>5th Lecture</i> : Economics and Profitability of HQCF Production.	5.5
Course Presentations By Resource Persons	
<i>1st Lecture</i> : Production and Quality Requirements of Glucose Syrup.	6.5

2nd Lecture: Production and Quality Requirements of HQCF.	6.6
3rd Lecture: Equipment Requirement and General Maintenance	5.7
4th Lecture: Economics and profitability of Glucose Syrup Production.	5.4
5th Lecture: Economics and Profitability of HQCF Production.	5.5
Practicals	
Glucose Syrup Production	6.5
HQCF Production.	6.5

b. Participants' General Comments

Name	Comments	Organisation
John Kofi Abura	This training workshop has really served as an eye-opener and has highlighted on the crucial problem facing my organization. I recommend that more of such workshops should be organized to bring to bear on most of these problems.	AAPC
Michael Amamoh	It was worth attending every aspect of the workshop, from the exhibited samples, the discussions, the resource persons and general organization is commendable. The demonstrations are very good.	So Fine Ventures
Elizabeth Adordie	Generally the course gave me new insight to what we are already doing in our outfit and added new technology. The course has also shown areas to recover cost out of the waste. It is a profitable venture.	Praise Export Services
Nathaniel Botchway	Generally it was a useful training workshop and has given me practical knowledge about HQCF and glucose syrup production	Feed & Flour Ghana Ltd (FFGL)
Charles Kay Quartey	The course generally is very useful to young entrepreneurs and beginners of HQCF and glucose syrup industry so I would like to suggest the continuation of this course periodically.	Feed & Flour Ghana Ltd (FFGL)
Rev. Susan Hanson	Very educative	Private Individual
Kate Sam	The workshop as I have noted is very interesting and profitable. I have gained more from it. I am going to put it into practice with my members, because compared to gari the HQCF and glucose syrup production is more beneficial.	B. C. P
Mr. Wisdom Yaw Tetteh	This workshop is good in preparing us to do real business. Link us also with NGO's that can help us financially as beginners and acquiring machinery, more workshops and follow-ups and new projects.	M. C. P. A
Baffour Asare-Becdiako	The processing method is well understood but quite tedious when one has to go into commercial quantities	FARMINDUS
Kennedy Owusu Amissah	Very good training. Yet we may need financial help that is money and machines to start the work.	FARMINDUS
Davis D. Kotey	It was very good and well organized and should be organized once more especially the practicals.	A. A. P. C

c. Participants' Response to Specific Questions

Are you currently using any of the technologies discussed in this workshop (Specify)

John Kofi Abura	Production of High quality cassava flour
Michael Amamoh	Yes cassava flour fufu powder
Elizabeth Adorable	Production of High quality cassava flour
Nathaniel Botchway	No
Charles Kay Quartey	No
Rev. S. Hanson	No
Kate Sam	No
Mr. Wisdom Yaw Tetteh	No
Baffour Asare-Bediako	Yes
Kennedy Owusu Amissah	-
Davis D. Kotey	Yes and working very well

Would you be interested in taking up and incorporating any of these technologies in your industrial operations? If yes, which ones.

John Kofi Abura	Yes, production of glucose syrup from cassava flour/starch
Michael Amamoh	Yes, production of glucose syrup
Elizabeth Adordie	
Nathaniel Botchway	Yes, HQCF
Charles Kay Quartey	Yes, stainless steel grating compartment, screw press, electronic dryer, plate attrition mills.
Rev. S. Hanson	Yes, Production of HQCF.
Kate Sam	Yes, HQCF, and the Glucose Syrup.
Mr. Wisdom Yaw Tetteh	Yes, HQCF/Glucose syrup
Baffour Asare-Bediako	Yes, Sifting and Filtration
Kennedy Owusu Amissah	Yes, Grating, Pressing and Drying machines
Davis D. Kotey	Yes, Glucose Syrup.

Would you appreciate a follow-up from the Food Research Institute. If no, what are the immediate obstacles to the uptake of the technology by your organization?

John Kofi Abura	Yes
Michael Amamoh	Not immediately. My organization is moving from its present location.
Elizabeth Adordie	Yes
Nathaniel Botchway	Yes
Charles Kay Quartey	Surely appreciated
Rev. S. Hanson	Yes, but I need seed capital to establish.
Kate Sam	Yes
Mr. Wisdom Yaw Tetteh	Yes
Baffour Asare-Bediako	Yes
Kennedy Owusu Amissah	Yes
Davis D. Kotey	Yes

CLOSING CEREMONY AND PRESENTATION OF CERTIFICATES

The workshop was officially closed by Mrs P. Lokko, and Dr. W.K.A. Amoa-Awua, Head of the Commercial and Information Division and Deputy Director respectively of the Food Research Institute. Certificates of participation were presented to participants by Mrs P. Lokko with assistance from Ms Mary Halm, Head of the Microbiology division of the Food Research Institute. One of the participants, Rev. Susan Hanson offered a prayer to finally close the workshop. Below are pictures of participants receiving their certificates.



Mrs. P. Lokko, Head of the Commercial and Information Division, FRI, giving her closing remarks, during the closing ceremony.

PRESENTATION OF CERTIFICATES
CONTINUES



Mr. Michael Amamoh receiving his certificate of participation.



Mrs. Elizabeth Adordie receiving her certificate of participation.



Mr. Kennedy Amissah receiving his certificate of participation.



Mr. Charles Quartey receiving his certificate of participation.



Mr. Davis D. Kotey receiving his certificate of participation.



Mr. Wisdom Tetteh receiving his certificate of participation.

PRESENTATION OF CERTIFICATES
CONTINUES



Mr. Baffour Asare-Bediako receiving his certificate of participation.



Rev. Susan Hanson receiving her certificate of participation.



Mr. Elvis Baidoo receiving his certificate of participation.



Madam Kate Sam receiving her certificate of participation.



Mr. Nathaniel Botchway receiving his certificate of participation.



Mr. Kofi Abura receiving his certificate of participation.

THE WORKSHOP IN RETROSPECT

From the questions asked during the general discussions and participants evaluation of the workshop it may be concluded that the workshop has been very useful in exposing participants to the production processes and financial benefits of the two products. Even though participants are interested in taking up the technologies, the usual problems of getting adequate processing equipment that would reduce the drudgery associated with the artisanal level of production and seed capital to invest in these equipment, are issues of concern. The workshop has come and gone but as to whether it would produce any useful results is another question all together. As at the time of writing this report one of the workshop participants who has been instrumental in taking samples of glucose syrup to various end-users in an attempt to convince them to try the product has won the confidence of one biscuit manufacturer who has requested to be supplied with 300kg of the product daily. Certainly the workshop may be said to have started bearing some fruit. Every effort has to be made to ensure that the fruit bearing is sustainable, and the size of the fruit increased.

REFERENCES

- Dziedzoave, N.T., Graffham, A.J. and Boateng, E.O. (2003). Training Manual on the production of High quality cassava flour. Training material produced under the DFID-funded research project (R7418) on 'New Markets for Cassava'. Accra. Ghana.
- Dziedzoave, N.T., Graffham, A.J. and Boateng, E.O. (2003). Training Manual on the production of Glucose Syrups. Training material produced under the DFID-funded research project (R7418) on 'New Markets for Cassava'. Accra. Ghana.

APPENDICES

APPENDIX I: WORKSHOP PROGRAMME

FOOD RESEARCH INSTITUTE
FRI/DFID/CPHP PROJECT ON ‘SUSTAINABLE UPTAKE OF CASSAVA AS AN INDUSTRIAL
COMMODITY’
2-DAY TRAINING WORKSHOP ON THE PRODUCTION OF HIGH QUALITY CASSAVA
FLOUR AND GLUCOSE SYRUPS
PROGRAMME

DAY 1 – Thursday 8th May 2003

8.30 - 9.00 a.m.	Registration of Participants	Gregory Komlaga, FRI David Abusah, FRI
9.00 - 9.05 a.m.	Welcoming of Participants	Nanam Dzedzoave, FRI
9.05 - 9.15 a.m.	Opening Address	W.A. Plahar , Director, FRI
9.15 - 9.25 a.m.	Group Photograph	
9.25 - 10.15 a.m.	<i>1st Lecture:</i> Production and Quality Requirements of Glucose Syrup.	Nanam Dzedzoave, FRI
10.15 - 10.30 a.m.	Coffee Break	Mrs I. Tamakloe, FRI
10.30 - 11.30 a.m.	<i>2nd Lecture:</i> Production and Quality Requirements of HQCF.	Nanam Dzedzoave, FRI
11.30 - 12.30 p.m.	Demonstration of Glucose Syrup Production.	Nanam Dzedzoave, FRI
12.30 - 2.00 p.m.	Lunch	Mrs I. Tamakloe, FRI
2.00 - 4.00 p.m.	PRACTICALS: Glucose Syrup Production HQCF Production.	Gregory Komlaga, FRI, and David Abusah, FRI

DAY 2 - Friday 9th May 2003

9.00 – 9.45 a.m.	<i>3rd Lecture:</i> Equipment Requirement and General Maintenance	Cletus Gyato, FRI
9.45 - 10.00 a.m.	Coffee Break	I. Tamakloe (Mrs), FRI
10.00 - 12.00 p.m.	PRACTICALS: Glucose Syrup Production HQCF Production	Gregory Komlaga, FRI, and David Abusah, FRI
12.00 - 1.30 p.m	Lunch	I. Tamakloe (Mrs), FRI
1.30 - 2.15 p.m.	<i>4th Lecture:</i> Economics and profitability of Glucose Syrup Production.	Godwin Ameleke, ARI
2.15 - 3.00 p.m.	<i>5th Lecture:</i> Economics and Profitability of HQCF Production.	E.O. Boateng, NBSSI.
3.00 - 3.30 p.m.	General Discussion	Nanam Dzedzoave, FRI
3.30 – 4.00 p.m.	Closing Ceremony.	W.A. Plahar, Director, FRI

APPENDIX II: CONTACT DETAILS OF WORKSHOP PARTICIPANTS

NAME	ORGANISATION	ADDRESS	TELEPHONE	E-MAIL
Wisdom Yao Tetteh	Mantsi Cassava Processing Unit	C/o Ga District Assembly		
Kennedy O. Amissah	Farminus Gh Ltd		021-248736	
Charles Quartey	Feed and Flour Gh Ltd.	Box CT 1334, Cantonment	024-254590	
Kofi Abura	Amasa Agro-processing C. Ltd	Box 6302, Accra	024-725201	kofiabura@yahoo.com
D.D. Kotey	Amasa Agro-Processing Co. Ltd	Box 6302, Accra.	024- 725201	
Kate Sam Anas	Brofyedur Cassava Processing Unit			
Baffour Asare-Bediako	Farminus Gh. Ltd.	Box AH 150, Achimota.	020-8138332	Bafasare2003@yahoo.com
Rev. Susan Hanson	Private Entrepreneur	Box CT 2340, Cantonment.	024-646003	
Elvis Baidoo	Food Research Institute	Box M.20, Accra.	021-500470	kobinaelvis@yahoo.com
Nathaniel Botchway	Feed and Flour Gh. Ltd.	Box CT 1334, Cantonment.	021-765087	
Elizabeth Adordie	Praise Export Services	Box 1947, Accra.	021-402883	praisee@africaonline.com
Michael Amamoh	So Fine Ventures	Box KN 1, Kaneshie	020-8133256	sunnvsofine@yahoo.com

APPENDIX III: WORKSHOP EVALUATION FORM

FOOD RESEARCH INSTITUTE

FRI/DFID/CPHP PROJECT ON ‘SUSTAINABLE UPTAKE OF CASSAVA AS AN INDUSTRIAL COMMODITY’

2-DAY TRAINING WORKSHOP ON THE PRODUCTION OF HIGH QUALITY CASSAVA FLOUR AND GLUCOSE SYRUPS

WORKSHOP EVALUATION

ITEM BEING EVALUATED	LEVELS OF ASSESSMENT						
	Excellent	Very good	Good	Fair	Poor	Very Poor	Extremely Poor
General Organisation							
Registration of Participants							
Welcoming of Participants							
Opening Address							
Group Photograph							
Sample Exhibits							
General Discussion							
Lunch							
Coffee Break							
Course Content							
<i>1st Lecture:</i> Production and Quality Requirements of Glucose Syrup.							

<i>2nd Lecture</i> : Production and Quality Requirements of HQCF.							
<i>3rd Lecture</i> : Equipment Requirement and General Maintenance							
<i>4th Lecture</i> : Economics and profitability of Glucose Syrup Production.							
<i>5th Lecture</i> : Economics and Profitability of HQCF Production.							
Course Presentations By Resource Persons							
<i>1st Lecture</i> : Production and Quality Requirements of Glucose Syrup.							
<i>2nd Lecture</i> : Production and Quality Requirements of HQCF.							
<i>3rd Lecture</i> : Equipment Requirement and General Maintenance							
<i>4th Lecture</i> : Economics and profitability of Glucose Syrup Production.							
<i>5th Lecture</i> : Economics and Profitability of HQCF Production.							
Practicals							
Glucose Syrup Production							
HQCF Production.							

Comments:

Are you currently using any of the technologies discussed in this workshop (Specify)?

Would you be interested in taking up and incorporating any of these technologies in your industrial operations?

If yes specify which ones?

Would you appreciate a follow-up from the Food Research Institute?

If no, what are the immediate obstacles to the uptake of the technology by your organisation?

.....

Name:..... Organisation Date Signature

APPENDIX IV:

SAMPLE OF CERTIFICATE OF PARTICIPATION



APPENDIX V: COPY OF WORKSHOP REGISTRATION SHEET

FOOD RESEARCH INSTITUTE
 FRI/DFID/CPHP PROJECT ON 'SUSTAINABLE UPTAKE OF CASSAVA AS AN INDUSTRIAL COMMODITY'

2-DAY TRAINING WORKSHOP ON THE PRODUCTION OF HIGH QUALITY CASSAVA FLOUR AND GLUCOSE SYRUPS
 REGISTRATION OF PARTICIPANTS

NAME	ORGANISATION	ADDRESS	TELEPHONE	E-MAIL	SIGNATURE
1. Wisdom Yao Tetteh	MCPA	40 GA DIST ASS.			
2. Kennedy O. Amankwa	FARMIN DUS		021-248736		
3. Charles Quarney	FFGL	Box of 1334	024-2541590		
4. Kofi Abung	AAPC	Box 6302	024-725201	Kofiahunga@kfoa.com	
5. D. J. S. K. K.	AAPC	Box 6302	024 72520		
6. Kate Sam Amos	BCPA				
7. B. Asare-Bediako	FARMIN DUS	Box A11 150 ACIT	020-8138532	bafosame 2003 @yahoo.com	
8. Rev. Susan Hanson		Box CI 2310, CI	024 646003		
9. Baidoo Elvis	FRI	M20 ACCR	021-20470	Kobinaelidjy	
10. Ned Botchway	FFGL	Box CI 1334	765087		
11. ELIZABETH ABERNETHY	PRACE EXPERT SERVICES	Box 1947, ACCR	402883	PRAISFE W AFRICAN ONLINE	
12. MICHAEL AMAMOH	SOFTWAVE VENTURES	Box KN 1 KAMEHIE	0208133256	Sunnysepa@fri.gov	