



International Coffee Organization
Organización Internacional del Café
Organização Internacional do Café
Organisation Internationale du Café

ICC 94-7

12 September 2005
English only

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Projects/Common Fund

International Coffee Council
Ninety-fourth Session
27 – 29 September 2005
Salvador, Brazil

**Enhancement of coffee quality through
prevention of mould formation**
Project progress report as at August 2005

Background

A copy of the latest progress report for the project “Enhancement of coffee quality through prevention of mould formation”, is attached. The report covers the period January – August 2005.

Action

The Council is requested to note this report.

FAO Project Ref: GCP/INT/743/CFC

CFC Project Ref: CFC/ICO/06

Project Progress Report Jan-Aug 2005

Executive Summary

August 2005



Enhancement of Coffee Quality through Prevention of Mould Formation

PROJECT PROGRESS REPORT

for

Enhancement of Coffee Quality through Prevention of Mould Formation

Report No. 9

I. Project Summary

1. Title: Enhancement of Coffee Quality through Prevention of Mould Formation
2. Number: GCP/INT/743/CFC and CFC/ICO/06
3. Project Executing Agency (PEA): Food and Agriculture Organization (FAO)
4. Location: Brazil, Colombia, Côte d'Ivoire, India, Indonesia, Kenya, Uganda, CIRAD (Montpellier), Ecuador (CFC/ICO/25FT)
5. Starting Date: 13th September 2000 (Disbursement of AA by CFC)
6. Completion Date: October 31st 2005 (CFC Funds)
October 31st 2005 (Dutch Govt. Funds)
7. Financing:
 - Total Project Cost: USD 6,242,000
 - Of which:
 - CFC Financing (Grant): USD 2,526,000 (under CFC/ICO/02) and USD 60,000 (under CFC/ICO/25FT)
 - Co-financing:
 - European Coffee Industry USD 367,000
 - Dutch Government USD 1,500,000
 - Counterpart Contribution:
 - CIRAD USD 200,000
 - EMBRAPA (Brazil), CENICAFE (Colombia), CBI (India)
USD 226,999 each
 - ICCRI (Indonesia), CNRA (Côte d'Ivoire), UCDA (Uganda), CRF (Kenya)
USD 227,000 each

II. Period Covered by this Report

From: January 2005 To: August 2005

III. Status of Project Implementation

Final Project Activities:

Since the start of 2005, the main focus of the PEA has been to ensure all data relating to field trials, including subsequent mycological and OTA analyses, were obtained in a timely fashion. Without this complete information the final synthesis of project findings and the development of project guidelines for the hygienic production of coffee would, necessarily, be more problematic.

Final field activities and trials were completed in all project countries through the first few months of 2005. Experimental protocols included:

- Investigating the effects of hindered drying, delayed processing, and stirring frequency on drying time courses;
- Final drying surfaces comparison trials, including investigations into tree-drying;
- Analysing whether there is a link between bean defects and OTA production;
- Final trials on the storage of dry and fresh beans/cherries;
- Final composting investigations;
- Various market chain surveys and socio-economic studies.

The majority of trial data from the seven project countries was received by August 2005. However, in some cases, this was literally months after it was hoped the central project team would have a chance to analyse and evaluate it. All data and information submitted by collaborators for trials completed since the start of the project is being analysed by Dr Frank. A final report covering various synthetic 'horizontal' analyses of a number of subject areas pertaining to OTA in coffee will be completed before the end of 2005. This will include:

- Distribution of OTA producers
- Performance of drying systems and management of drying operations and their impact on coffee quality and safety
- Impact of non-drying processing routines
- Impact of storage conditions on coffee quality and safety and moisture management during transportation of coffee
- Assessment of moisture measurement methods and the relation between moisture content and A_w of coffee

In the meantime the central project team has been working on finalising project guidelines in time for the final project meeting. These guidelines provide recommendations pertaining to the whole coffee chain. They are important from both a practical perspective for those involved in coffee production, and from a policy perspective to guide the creation of regulatory frameworks within which such recommendations can be enforced. Amongst other topics the guidelines for hygienic coffee production will cover:

- Recommendations on drying practices - although the project has already made general recommendations regarding drying practices, which have been disseminated widely, the aim of the final set of field trials is to make these as conclusive as possible
- Recommendations on feasible methods of moisture management at all stages of the marketing chain
- Advice regarding bean defects and OTA contamination

Other notable activities under the project during 2005 have included:

- A meeting between the PEA, LMC International and Mick Wheeler to discuss the methodology and scope of a socio-economic study to examine the uptake of hygiene recommendations under the project took place in Rome on February 11th 2005. LMC International were subsequently commissioned to complete a study to examine the potential impact of hygiene recommendations (under different scenarios on the coffee industry), as well as the application of traceability to the coffee sector. The final report is scheduled for completion by early September 2005.
- A short study to evaluate the risk of varying container fill levels was also commenced. This is using 'mini-containers', developed by Instituto de Tecnologia de Alimentos (ITAL) in Brazil, to model international coffee transportation. The findings of this study are due to be submitted at the end of August 2005, and will be reported at the final project meeting.

The matrix in the next section of this report summarises the situation by Component and Activity.

Training activities: One of the major goals of the project ‘Enhancement of Coffee Quality through the Prevention of Mould Formation’ (FAO/CFC/ICO Global coffee project) was to reduce levels of ochratoxin A (OTA) contamination in coffee by building the capacity of all of those involved in the production, processing, handling and storage of green coffee to adhere to good hygiene practices. Sustainably reducing levels of OTA contamination of coffee in producing countries depends heavily on implementing effective programmes of training for everyone involved in the coffee sector.

As well as ongoing national training programmes derived from previous ‘Training of Trainers’ (ToT) events, one final Training of Trainer’s courses on ‘Application of food hygiene and HACCP principles to the coffee chain’ was completed in mid-2005. A sub-regional ToT course for participants from the 8 main Francophone producer countries in Africa was successfully delivered in Rwanda between May 23rd and June 3rd 2005.

By the end of the project, approx. 93% of coffee export origins (calculated on total average exports in the 10 years 1995-2004) had participated in one of the 10 ToT events completed.

Much activity in 2005 has focussed on completing the interactive CD-Rom training resource ‘Good Hygiene Practices along the coffee chain’. A beta version was circulated for peer review in mid-2005, and the initial version of the CD-Rom will be available at the World Coffee Conference and the final project meeting in September 2005.

The project website: www.coffee-ota.org went live in May 2005, in English, French and Spanish. The CD-Rom based training resource (‘Good Hygiene Practices along the coffee chain’) will also be available from this site by October 2005.

Other capacity building: Procurement of equipment to assist the completion of the above activities, and to support national capacity building in project countries, has now finished. Purchase of items of HPLC equipment (manual injector, spectrofluorometric detector, and data control system) for CNRA, Côte d’Ivoire, was completed in 2004. Purchase and installation of a Shimadzu modular HPLC system was completed for UCDA, Uganda in late 2004. Refurbishment and rehabilitation of existing Perkins Elmer HPLC equipment owned by CRF, Kenya was completed during the first half of 2004 as a low-cost option to upgrade Kenya’s national capacity in OTA analysis.

Purchase of additional computer equipment for Côte d’Ivoire, as well as AV equipment for Côte d’Ivoire and India has been completed in this period (Activity 4.4.4), as has the purchase of laboratory ovens and other field/laboratory equipment and supplies for Brazil, Colombia, Côte d’Ivoire, India, Indonesia, Kenya and Uganda (Activity 2.1.1).

Administrative/Financial: Comprehensive country budgets, experimental protocols and work plans for the final months of the project in 2005 were finalised by the PEA in conjunction with the project Collaborating Institutions (CIs). These were approved by the Common Fund for Commodities (CFC), the Dutch Ministerie van Buitenlandse Zaken (MvBZ) and the International Coffee Organization (ICO).

The majority of annual audits for financial year 2004 for collaborating countries have been received by the PEA. To date there are no indications of irregularities. The Fund agreed to the PEA undertaking a consolidated overall internal audit review of expenditures recorded in financial years 2004 and 2005, and this will be completed, as in previous years, by FAO’s Audit Division.

Project stakeholders met at the Fund on 8th December 2004, and discussed final project activities for 2004/2005. It was agreed that the Final Dissemination Workshop of the project would be held in Salvador, Brazil in September 2005 to coincide with the second ICO World Coffee Conference. The project completion date was extended from June 30th 2005 to October 31st 2005 to accommodate this final meeting and workshop.

A number of Project Meetings have been held in Rome since the start of 2005. Since the Spring of 2005 these meetings have primarily involved discussions with the project mycologist on the interpretation of field trial data the project has accumulated.

In addition to the global coffee mould project, the Food and Agriculture Organization of the U.N. has approved the following four Technical Cooperation Projects (TCP) since 2002:

- Uganda (TCP/UGA/8923 and TCP/UGA/2801 – ‘Enhancement of Coffee Quality through the Prevention of Mould Growth’), concluded 31st March 2003, total value US\$ 422,000.
- Vietnam (TCP/VIE/2903 – ‘Improvement of coffee quality and prevention of mould formation and ochratoxin A (OTA) contamination’), approved in September 2002, value US\$ 372,000.
- Thailand (TCP/THA/3002 – ‘Improvement of coffee quality and prevention of ochratoxin A on Robusta coffee’), approved March 2004, value US\$ 368,000.
- Ecuador (TCP/ECU/3001 – ‘Prevención de hongos productores de Ocratoxina A (OTA) en el café ecuatoriano’), approved July 2004, value US\$215,000.

Note on Implementation Constraints: As stated above, it was hoped that the central project team would have access to all the data and analyses (both mycological and OTA) from collaborators by April 2005. Unfortunately, this was not the case, and a number of important datasets and results were not submitted until late August. This has made the task of analysing and interpreting project data, and preparing Guidelines based on these findings, far more challenging for the central project team than it might otherwise have been.

Activity Summary:

<i>Planned Activities</i>	<i>Target Set</i>	<i>Present Status</i>
Component I: Diagnosis in chosen participating countries		
Activity 1.1.1	Laboratory experiments at the CoE to determine A_w windows for different OTA producing fungi.	Identify OTA producing <i>Aspergilli</i> Identify exact window of action for OTA producing <i>Aspergilli</i> , and importance of competing yeasts.
		Completed. Completed. OTA production window sufficiently defined. Report completed.
Activity 1.1.2	Validation of critical A_w windows through experiments in collaborating centres in project countries.	Establish operating (drying) conditions in each country and relate observed A_w with mould and OTA contamination.
		Completed. Core validation completed, and final related experimental trials finished.
Activity 2.1.1	Selection and acquisition of optimal moisture measuring equipment for use by collaborating centres.	Methods of moisture analysis established for all participating centres and all necessary equipment acquired.
		Completed. Equipment procured for Brazil, Colombia, Côte d’Ivoire, India, Indonesia, Kenya, and Uganda. Low-cost Chinese made moisture meters procured and evaluated. Additional equipment (thermo-hygrometers, A_w meters, solarimeters and anemometers) procured for drying trials (Activity 2.1.2).
Activity 2.1.2	Conducting drying experiments in collaborating centres.	Improved and appropriate drying procedures established in participating countries.
		Completed. Drying experiment protocols developed for all countries and final trials concluded, including investigations re: delayed drying, tree-drying, re-wetting, raking, drying layer thickness etc. See below for details. Project GHP Guidelines will inform future procedures.

<i>Planned Activities</i>	<i>Target Set</i>	<i>Present Status</i>
Component I: Diagnosis in chosen participating countries contd.		
Activity 3.1.1	Sound ecological understanding of fungal communities - design trials to investigate and evaluate conditions during processing, storage and transportation, allowing for comparative analysis of production practices.	Determine the relationship between the fungal communities, mould growth and conditions of processing & storage.
		Completed. First and second phase sampling concluded and contamination locales identified. Summary mycological studies report for each country completed. Final research trials on storage of dry and fresh beans/cherries and impact of processing regimes completed 2004/5. Final international transportation trial (Uganda to Europe) completed early 2005. Survey of coffee chains to help evaluate CCPs completed in 2004/5 in Côte d'Ivoire, India, Indonesia and Uganda.
Activity 3.2.1	Systematic and objective evaluation of field trials, verification of risk of re-contamination via by-products and optimization of their disposal.	Determine risk of contamination from pulp and husk.
		Completed. Inconclusive evidence to date re: mulching and composting. Results from dust contamination and composting trials from India analysed, and additional composting trials in Colombia and India completed in 2005.
Activity 3.3.1	Determination of valid critical control points for dissemination, based on field trial results.	Determine and disseminate code of good agricultural and manufacturing practice and HACCP-based tools for coffee chain.
		Near completion. CCPs determined and working operational limits established and incorporated into ToT courses and training materials as well as ECF Code of Practice. GHP CD-Rom and Guidelines being finalised for final project meeting, September 2005. See also Activity 5.1.1 for details.
Activity 3.4.1	Conduct feasibility studies on proposed recommendations of changes in practices and uptake of recommended technologies. Studies to cover socio-economic as well as non-economic feasibility aspects, and to look at investment project possibilities.	Feasibility studies completed with socio-economic analysis and recommendations/justifications for proposed practices/technologies.
		Near completion. Interim socio-economic studies on solar dryer technology completed in Uganda. Socio-economic studies undertaken in Côte d'Ivoire and India in 2004/5. CIRAD socio-economic studies and surveys in Uganda and Indonesia completed during 2004/5, involving national consultants and local counterparts. Global economic-based study to determine the impact and costs of adopting recommended hygiene practices along the coffee chain commissioned from LMC International in April 2005, and scheduled for delivery September 2005.

<i>Planned Activities</i>	<i>Target Set</i>	<i>Present Status</i>	
Component II: Dissemination of Good Practice / HACCP tools			
Activity 4.1.1	Establish links among all the collaborating institutions.	Creation of active OTA network in coffee-producing countries.	Ongoing. Regular communication maintained among officials of all collaborating institutions, PEA and Consultants. Regional OTA workshop held in October 2002, Indonesia. Full project meeting held in March 2003, Uganda. Project collaborator participation in ASIC 2004. Final project meeting and workshop scheduled for September 2005, Brazil.
Activity 4.1.2	Develop a directory of expertise available in collaborating countries.	Directory of expertise in participating countries developed and disseminated.	Completed. Expertise incorporated into 'Good Hygiene Practices along the coffee chain' CD-Rom training resource.
Activity 4.2.1	Training of counterpart personnel in latest techniques for determination of OTA, A_w and moisture content in coffee, and in coffee related field and laboratory based microbiological techniques.	National personnel in all participating countries trained in relevant mycological and chemical analyses and laboratory procedures.	Completed. Field mycology workshops completed in Brazil (Brazil + Colombia) and Kenya (Kenya + Uganda + Côte d'Ivoire). Additional training provided by project mycologist during technical backstopping missions and for Côte d'Ivoire in May and December 2003 and in Brazil and Colombia in 2004. TLC OTA analysis training completed in Uganda, December 2002 and HPLC training completed for Côte d'Ivoire, Kenya and Uganda in April 2004. Study tours of Nestlé NQAC, Singapore completed by Coffee Board of India and ICCRI. Coffee Board of India study tour to Brazil completed in September 2003 re: OTA analytical techniques and regulatory systems. CENICAFE staff trained in HPLC analysis at Mictox in 2005. Good laboratory practices manual and training video on OTA analytical techniques produced by LACQSA, Brazil.
Activity 4.2.2	Procurement, installation and operation of lab equipment for mycological analysis, determination of OTA, A_w and moisture content.	Laboratory capacity strengthened in all participating countries.	Completed. Laboratory equipment and materials procured for all countries. Facilities upgraded in Kenya and HPLC equipment refurbished. HPLC equipment procured for Indonesia; HPLC and TLC equipment purchased for Uganda, and new laboratory constructed. TLC equipment procured in 2003 for Côte d'Ivoire and HPLC equipment procured in 2004. Analytical equipment procured for Colombia and India. Inter-laboratory proficiency ring test on OTA analysis commenced late 2004, run by LACQSA, Brazil, and scheduled to finish in September 2005.

<i>Planned Activities</i>	<i>Target Set</i>	<i>Present Status</i>	
Component II: Dissemination of Good Practice / HACCP tools contd.			
Activity 4.3.1	Prepare, test and finalise training materials covering application of HACCP/GAP/GMP.	Training materials refined for GAP/GMP/HACCP. Training and education materials prepared for identified target groups throughout coffee chain.	Completed. Basic ToT package developed. Ten ToT courses completed to date (including FAO TCP projects), covering 30+ producer countries. GAP/GMP 'Do's and Don'ts' developed & circulated. Posters and farmer information leaflets produced. Further training materials and Level II courses at national level being developed and implemented (Indonesia, India, Kenya and Uganda). 'Wordless' booklet ('COFFEA') for training of farmers in good practices finalised and distributed globally by FAO in 2003. 'Good Hygiene Practices along the coffee chain' CD-Rom finalised.
Activity 4.4.1	Establish and maintain printed, video & computer based resources for training materials and technical information. Including CD-ROMs, video training aids, and Internet materials.	Training materials produced and available for circulation.	Completed. Smallholder farmer focussed posters and GMP/GAP 'Do's and Don'ts' leaflets produced in 2002. Project mycological handbook completed. Training videos and good lab. manual re: OTA analysis developed by LACQSA and MAPA, Brazil. Development of CD-Rom training resource 'Good Hygiene Practices along the coffee chain' completed, to be disseminated in September 2005.
Activity 4.4.2	Disseminate training materials among coffee producing countries.	As above.	Near Completion. Copies of 'COFFEA' leaflet distributed to 45 coffee producing countries in 2003. 'Good Hygiene Practices along the coffee chain' CD-Rom to be freely available on Internet and CD in September 2005. Also refer to Activity 4.4.1.
Activity 4.4.3	Develop an Internet page, including bulletin board, and make available to all interested parties	Project website developed.	Completed. Website live in English, French and Spanish.
Activity 4.4.4	Equip participating institutions with appropriate hardware, software and training in basic computer use and the Internet.	Procure computer equipment as required.	Completed. Computer and ICT equipment and/or Internet connectivity purchased for all project countries based upon identified needs.

<i>Planned Activities</i>	<i>Target Set</i>	<i>Present Status</i>
Component IIIa: Training & implementation of Good Practice / HACCP systems		
Activity 5.1.1	Organise training workshops, one for each sub-region, involving approximately 12 trainees per workshop.	Training workshops organised and completed.
		Completed. Requirement exceeded. ToT courses completed in Ecuador (sub-regional), Guatemala (sub-regional), India x2 (national), Indonesia (one national and one sub-regional), Kenya (sub-regional), Uganda (national) and Rwanda (sub-regional) involving 25+ trainees on each occasion. Under the Vietnamese FAO TCP a national ToT course was completed in late 2003. Under the Thai FAO TCP a national ToT course was completed in early 2005.
5.2.1	One training course in each producing country involving collaborating centres and trained trainers, to benefit 12-15 extension workers per course.	National training events organised and completed.
		Ongoing. Stage 2 ToT courses in India implemented. Information sessions undertaken in Uganda, and Sensitization of Stakeholder's workshop completed in Guatemala, Kenya, and Uganda. Development of follow-up training materials underway with local farmers' schools, and comprehensive Stage 2 training completed in 2003/2004 in Indonesia. Extensive training in Colombia reaching thousands of farmers completed. Farmer training materials produced in Uganda, and Factory Managers' course outline prepared for Kenya.
Component IIIb: Monitoring and feedback - guidelines disseminated and compliance reviewed		
Activity 6.1.1	Prepare, test and finalise guidelines for GAP and GMP covering whole coffee industry based on the experiences gained and distribute to appropriate institutions and organizations.	Guidelines produced suitable for distribution to global coffee industry.
		Near completion. Preliminary Guidelines circulated via ICO as ED 1763/00 Rev 1 in May 2001 based on the conclusions of the ASIC workshops in 1997 and 1999, and the findings of the Pilot Project. Subsequently replaced by draft Code of Practice (ICO document PSCB No. 36/02), finalised in June 2002, updated with work from the global coffee mould project. Project-based Guidelines for GHP along the coffee chain being prepared, to be disseminated in September 2005.
Activity 6.2.1	Review application of GAP, GMP and HACCP control techniques at end of project in context of OTA contamination levels and compliance with suggested practices.	Review undertaken and reported on.
		Near completion. Three studies to define and recommend changes in the national regulatory systems of selected project countries (Uganda & Kenya, India and Indonesia) that would be required to ensure the best take-up of project outputs scheduled for completion in September 2005.
Activity 6.2.2	Provide assistance on monitoring and control programmes to collaborating countries if required.	Assistance provided as requested by project technical officers.
		Ongoing. Further requirements and needs of countries will be discussed in the final project meeting and workshop in September 2005.

IV.1 Resource Utilisation to 30th June 2005 – CFC Funds

Budget Item	Budget Categories	CFC CFC/ICO/06 USD	CFC Fast Track ICO/25FT USD	2000 Exp	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp	
Personnel & Consultancy										
International Experts										
Coffee Specialist /Project Mgr	V (5650)	\$4,000.00			\$650.00					
Food Microbiologist/ Coffee Specialist	V (5650)			\$12,617.95				\$18,240.36	\$10,655.84	
Senior Mycologist	V (5650)	\$106,444.25			\$68,826.30		\$57,126.92	\$63,593.81	\$52,588.51	
Project Administrator	V (5300)	\$135,000.00			\$69,476.30		\$57,126.92	\$81,834.17	\$63,244.35	
Sub-total		\$245,444.25	\$0.00	\$0.00	\$69,476.30	\$20,617.95	\$57,126.92	\$81,834.17	\$63,244.35	
National Experts										
Coffee Scientists, Field workers, Lab Analysts	IV (5660)	\$208,000.00	\$16,169.00			\$16,000.00	\$50,440.58	\$53,163.62	\$9,723.68	
Sub-total		\$208,000.00	\$16,169.00	\$0.00	\$0.00	\$8,000.00	\$50,440.58	\$53,163.62	\$9,723.68	
International Consultants										
Trainers	V (5650)	\$50,000.00						\$2,080.00	\$11,878.41	
Socioeconomists	V (5650)	\$17,284.39						\$10,691.59	\$36,910.17	
Training Material Specialist	V (5650)	\$50,000.00								
Data Handling Specialist	V (5650)	\$3,000.00							-\$2,260.87	
Investment Project Specialist	V (5650)									
Sub-total		\$120,284.39	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12,771.59	\$46,527.71	

Budget Item	Budget Categories	CFC CFC/ICO/06 USD	CFC Fast Track ICO/25FT USD	2000 Exp	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp
National Consultants									
Agronomists	V (5570)	\$10,000.00		\$0.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$0.00
Field workers	V (5570)								
Sub-total		\$10,000.00	\$0.00	\$0.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$0.00
Official Travel									
Project Meetings	VI (5900)	\$65,000.00		\$121.89	\$3,072.63		\$7,881.60		
Field visits, ToT courses, Meetings, Other travel (local)	VI (5900)	\$212,000.00			\$3,345.08	\$42,179.30	\$64,913.16	\$96,028.57	\$38,527.57
Other travel (local etc)	VI (5900)	\$140,143.00	\$8,000.00		\$13,000.02	\$29,752.00	\$54,141.96		
Sub-total		\$417,143.00	\$8,000.00	\$121.89	\$19,417.73	\$71,931.30	\$176,057.25	\$96,028.57	\$38,527.57
Contracts									
Centre of Microbiological Expertise	V (5650)	\$200.36		\$200.36			-\$9,216.34		
Other Institutions	V (5650)	\$271.00			\$271.00			\$2,826.26	
Sub-total		\$471.36	\$0.00	\$200.36	\$271.00	\$0.00	-\$9,216.34	\$2,826.26	\$0.00

Executive Summary - Annual Project Progress Report - CFC/ICO/06
Jan-Aug 2005

Budget Item	Budget Categories	CFC CFC/ICO/06 USD	CFC Fast Track ICO/25FT USD	2000 Exp	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp
Equipment									
Laboratory Equipment	I (6100)	\$201,084.00	\$6,500.00		\$19,750.08		\$126,545.85	\$61,296.78	
Non-expendable Equipment	I (6100)	\$85,500.00					\$53,547.33	\$22,701.82	\$7,132.80
Supplies and Material	III (6000)	\$165,000.00	\$10,787.00		\$88,000.04	\$2,500.00	\$32,511.21	-\$195.67	\$22,762.77
Infrastructure	I (6100)	\$70,000.00					\$2,306.32	\$59,058.30	
Sub-total		\$521,584.00	\$17,287.00	\$0.00	\$117,750.12	\$2,500.00	\$214,910.71	\$142,861.23	\$29,895.57
Training and Dissemination									
Training of trainers	VII (5920)	\$268,720.00	\$11,280.00		\$5,000.00	\$6,965.97	\$73,895.71	\$140,005.86	
Training of extension workers	VII (5920)	\$241,280.00				\$29,640.00	\$60,805.25		\$67,830.72
Study Tours and Farmer Training	VII (5920)	\$160,000.00				\$8,314.00	\$92,242.61		
Sub-total		\$670,000.00	\$11,280.00	\$0.00	\$5,000.00	\$44,919.97	\$226,943.57	\$140,005.86	\$67,830.72

Executive Summary - Annual Project Progress Report - CFC/ICO/06
Jan-Aug 2005

Budget Item	Budget Categories	CFC CFC/ICO/06 USD	CFC Fast Track ICO/25FT USD	2000 Exp	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp
General Operating Expenses & Supervision									
CFC supervision	IX	\$35,000.00							
Evaluations	IX	\$16,185.00							
General Operating Expenses	VIII (6130 / 6300)	\$281,888.00	\$7,264.00		\$28,920.80		\$89,448.05		\$32,591.98
Subtotal		\$333,073.00	\$7,264.00	\$0.00	\$28,920.80	\$0.00	\$89,448.05	\$0.00	\$32,591.98
GRAND TOTAL		\$2,526,000.00	\$60,000.00	\$322.25	\$250,835.95	\$147,969.22	\$805,710.74	\$529,491.30	\$288,341.58

IV.2 Resource Utilization to 30th June 2005 – Dutch Govt. Funds

Budget Item	Budget Categories	Dutch Govt. WW053803 US\$	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp
Personnel & Consultancy							
International Experts							
Coffee Industry Specialist (Gerrit van der Stegen) & mid term evaluation costs	V (5570)	\$60,000.00			\$11,308.20	\$37,040.48	\$11,651.32
Food Microbiologist / Coffee Specialist	V (5570)	\$91,221.46	\$41,221.46	\$50,000.00			
Senior Mycologist	V (5570)	\$74,000.00	\$2,338.54	\$24,666.00	\$34,712.89	\$12,282.57	
Project Administrator	V (5300)	\$117,000.00		\$53,227.78	\$29,200.00	\$34,572.22	
Sub-total		\$342,221.46	\$43,560.00	\$127,893.78	\$75,221.09	\$83,895.27	\$11,651.32
National experts							
National experts and staff locally recruited	IV (5660)	\$108,000.00			\$54,291.50	\$53,708.50	
Consultants (National and International)							
Coffee Socioeconomists, Trainers	V (5570)	\$52,000.00		\$9,500.00	\$16,421.84	\$26,078.16	
Investment/Feasibility Project Specialist	V (5570)	\$50,000.00				\$8,107.99	
Sub-total		\$210,000.00	\$0.00	\$9,500.00	\$70,446.34	\$87,894.65	\$0.00

Budget Item	Budget Categories	Dutch Govt. WW053803 US\$	2001 Exp	2002 Exp	2003 Exp	2004 Exp	2005 Exp
Contracts							
Centre of Microbiological Expertise	V (5650)	\$188,778.54	\$29,729.00	\$46,666.00	\$70,439.66	\$41,943.88	
Other Institutions	V (5650)	\$71,000.00	\$29,729.00	\$20,334.00		\$20,937.00	
Sub-total		\$259,778.54	\$59,458.00	\$67,000.00	\$70,439.66	\$62,880.88	\$0.00
Equipment							
Laboratory Equipment	I (6100)	\$229,000.00	\$24,500.00	\$88,502.49	\$18,269.74	\$97,727.77	
Pilot Plant/Coffee Dryers	I (6100)						
Supplies and Material	III (6000)	\$121,000.00		\$9,942.40	\$38,181.60	\$66,017.46	\$4,458.86
Infrastructure	I (6100)	\$70,000.00	\$14,750.00	\$4,000.00		\$51,250.00	
Sub-total		\$420,000.00	\$39,250.00	\$102,444.89	\$56,451.34	\$214,995.23	\$4,458.86
General Operating Expenses & Supervision							
Evaluations	IX	\$8,000.00					
General Operating Expenses	VIII (6130 / 6300)	\$260,000.00	\$17,295.00	\$44,961.88	\$77,255.47	\$115,108.67	\$4,123.67
Sub-total		\$268,000.00	\$17,295.00	\$44,961.88	\$77,255.47	\$115,108.67	\$4,123.67
GRAND TOTAL		\$1,500,000.00	\$159,563.00	\$351,800.55	\$350,080.90	\$564,774.70	\$20,233.85

*NB – A further \$20,233.85 was posted between Jan-Mar 2005 relating to 2004 expenditure, leaving a balance of \$45,547.00 for the study discussed in December 2004.

IV.3 Resource Utilization to 30th June 2005 – Summary Totals

CFC Category	Summary Totals by Expenditure Category to 30 th June 2005
I	\$659,343.48
III	\$266,174.47
IV	\$245,828.88
V	\$1,001,287.26
VI	\$402,084.31
VII	\$484,700.12
VIII	\$409,705.51
Total Expenditure	\$3,469,124.03

V. Conclusion

It is important to point out that a project involving seven collaborating countries over three continents makes for an extremely complex enterprise, and is arguably too many to manage convincingly. Close monitoring has sometimes proven difficult. This is not to say that the project will not achieve some useful outputs and contributions to the prevention of coffee mould and control of OTA, but to caution against the design of similar multi-country research-based projects in the future.

Nonetheless, administration, communication, co-ordination and management of the project have continued to improve since 2001.

The project has taken a risk-based approach to defining good hygiene practices in relation to the coffee chain. This approach was emphasised in the Training of Trainers' programme delivered to groups of senior technical personnel in coffee-producing countries, who will play a critical role in seeing that all people involved in the national coffee sector can improve their handling of coffee so as to reduce the risk of OTA contamination. This capacity-building has been a core feature of the project.

A key activity during 2004/2005 has been the development and completion of an comprehensive training resource on Good Hygiene Practices along the coffee chain, which will be available as a CD-Rom., and accessible from the project website. This is one of the key outputs of the project. Institutions from coffee-producing countries will benefit from this comprehensive technical support package that guides them in the development and implementation of national programmes to improve hygiene along the coffee chain.

The project has also been attentive to the fact that any recommendations to farmers and traders must be sustainable in the light of the coffee crisis. The project, therefore, has done its best to put emphasis on the socio-economic analysis of the coffee chain.

Laboratory capacity in participating has received much attention, as indicated above. Competent OTA analytical services provide important support to any national efforts in preventing OTA contamination of coffee. It is hoped that assisting to build this capacity will benefit coffee producing countries that are not part of this project, through the development of associated technical co-operation programmes.

VI. Summary of Main Project Achievements

Enhanced body of knowledge on the problem of OTA in coffee

Food safety regulation in international trade is evidence-based. Available data on various aspects of food safety problems strengthens the position of countries in putting forward their points of view.

- Information on distribution and levels of OTA contamination in coffee – Essential in evaluating proposals for maximum levels and in identifying points of the chain where hygiene control should be focussed.
- Relative performance of selected drying systems (in terms of OTA risk) – Essential for determining acceptable practices.
- Relative performance of main processing systems (in terms of OTA risk) – Essential for planning of sector development and deciding on recommended practice.
- Behaviour of microbial populations under real conditions of processing and handling – Essential for evaluating risks of OTA contamination.

Guidelines for the hygienic production of coffee

This provides a basis by which concerned institutions in producing countries can ensure that steps are taken all along the production-marketing chain to minimise the risk of OTA contamination in coffee.

This is of particular significance given the proposal of the delegation of the European Community to the Codex Committee of Food additives and contaminants (held in April 2005) to initiate work on a Code of Practice for the Prevention and Reduction of Ochratoxin A (OTA) Contamination in Coffee and Cocoa. The decision of the Committee was that the first step should be the preparation of a Discussion Paper on Ochratoxin A contamination in coffee and cocoa. Guidelines and other data from the project will be a critical input to this process.

Capacity building at main national coffee institutes in specific technical issues

- Capacity building in improving hygiene practices along the coffee chain:
 - Teams of trainers have been created in many countries (see above).
 - CD-Rom based hygiene resource tool created to support national institutes and other stakeholders in developing and implementing national programmes on training and dissemination.
 - Training equipment has been provided and selected target groups in many producing countries have been trained.
- Laboratory equipment and training in OTA analysis:
 - Laboratories upgraded in most of the producing countries with equipment and materials required for OTA analysis (see above).
 - Training in OTA analysis provided to analysts in project centres that lacked capacity; resource material to guide laboratories developed and inter-laboratory testing programme initiated to demonstrate level of competence achieved (scheduled for completion in September 2005)
- Laboratory facility development and training in mycological analysis:
 - Laboratories upgraded in most of the producing countries with equipment and materials required for mycological analysis (see above).
 - Training in mycological analysis provided to analysts in project centres that lacked that capacity; procedural manual on mycological analysis of coffee developed by the project and provided to laboratories to ensure good and standardised procedures in future work.

Strengthening of policy-making and regulation of the sector

- Seminars and training on Codex and the WTO have made decision-makers in the coffee sector aware of how they need to proceed in influencing international decisions on safety in the coffee chain.
- Surveys of practices and socio-economic analyses of selected issues have provided information to guide policy decisions that are under consideration in selected countries.

- Reviews of the system of coffee quality and safety regulation carried out in four project countries resulting in recommendations to the competent authorities on improving controls.

Regional/ international collaboration

The 'global' nature of the project has encouraged the development of an informal network. The involvement of regional bodies in some activities will hopefully facilitate continued collaboration among coffee professionals in producing countries to:

- Ensure capacity building, in the areas mentioned above in other producing countries.
- To collaborate in generating information and data that could be required for future challenges.

Annex I: Summary of Missions (January 2005 – August 2005)

Mission to India: M. Frank (January 2005)

Backstop progress made on the previous mission and start off the experimental programme planned for the Indian robusta harvest.

Mission to FAO, Italy: M. Wheeler and G. Stapleton (February 2005)

Meeting to discuss scope and methodology for final socio-economic study on uptake of hygiene recommendations of the project.

Mission to ICO, UK: J. Jackson (May 2005)

Attend ICO Council meeting and update Council on project progress.

Missions to FAO, Italy: M. Frank (May-August 2005)

Meetings to refine project Guidelines and analyse field trial data in preparation for final project report.