

**COTTON TESTING IN
WEST AND CENTRAL AFRICA
CHAPTER 6.1**

ANNEX B: REPORT OF THE PROJECT RESULTS v2

**Project CFC/ICAC/33
Commercial Standardization of
Instrument Testing of Cotton
with particular consideration of Africa**



This project is co-funded by the European Union
and the Common Fund for Commodities



REPORT ON THE RESULTS OF THE CFC/ICAC/33 PROJECT ON COMMERCIAL STANDARDIZATION OF INSTRUMENT TESTING OF COTTON FOR AFRICAN COTTON PRODUCING COUNTRIES

1. SUMMARY OF PROJECT IMPLEMENTATION RESULTS

Author: Mamadou Togola

Organization, Town, Country: CERFITEX, Ségou, Mali

1.1. Introduction

Cotton is the largest source of export earnings for many African countries. The cotton sector thus makes a critical contribution to rural poverty reduction, with cotton-related activities accounting for a major share of rural employment.

Instrument based cotton classing is one of the key determinants in promoting cotton on the world market. Although well recognized for its good quality, African cotton is “undervalued” because of its lack of a thorough characterization when it is placed on the international market.

The current method for evaluating the quality of cotton fiber in Africa is based on a manual and visual inspection. This method of evaluation, still used in African cotton companies even though most of their production is destined for export, is finding itself less and less in tune with demand from end users of cotton fibers.

To enable African countries to strengthen their position on the world market, and at the request of these countries, the International Cotton Advisory Committee (ICAC) launched the CFC/ICAC/33 Project on Commercial Standardization of Instrument Testing of Cotton for African Cotton Producing Countries.

The seminar launching the project took place on May 8, 2008 in Bamako in the presence of political officials, technical and financial partners, representatives of cotton companies, and manufacturers.

1.2. Project objectives

The objectives of this project, co-funded by the Common Fund for Commodities (CFC) and the European Union (EU), under ICAC supervision, were to:

- Make the international cotton trade more equitable by establishing a reliable system for instrument testing of cotton, accepted by all cotton producing countries.
- Provide necessary technical and material assistance to the cotton testing laboratories of African cotton companies so they can satisfy international criteria with respect to analysis of cotton quality.

1.3. Conclusion

The CFC/ICAC/33 Project on Commercial Standardization of Instrument Testing of Cotton for African Cotton Producing Countries has been of great importance to the cotton sector of the subregion inasmuch as it has helped strengthen and harmonize instrument testing of African cotton.

The Regional Technical Center, an outgrowth of project implementation, has greatly contributed to upgrading and improving the analytical capacities of cotton company laboratories and research centers for varietal improvement.

Cotton sector stakeholders in the subregion have expressed particular interest in supporting the activities of the Regional Technical Center but, in the face of certain constraints, it will take some time to further inform them and raise their awareness to a higher degree so they will be inclined to make the decision to subscribe more fully to the activities of the CTCIC-AOC.

To reach the stated objectives, it is thus essential that cotton sector stakeholders in the subregion participate in the activities of the CTCIC-AOC to ensure its sustainability at project completion.

2. PROJECT IMPLEMENTATION

2.1. Seminar to launch the CFC/ICAC/33 Project in West and Central Africa:

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One of the major steps in implementing the CFC/ICAC/33 Project in West and Central Africa was the project kick-off seminar, which took place on May 8, 2008 at Hôtel Salam in Bamako.

The objective of this seminar, which drew broad participation from cotton sector stakeholders of the West and Central Africa region, was to provide the project's technical and financial partners with the opportunity to emphasize the importance of the project for Africa as a whole.

The seminar drew broad participation from representatives of cotton companies in West and Central Africa.

The proceedings were led by Mr. Tiéna Coulibaly representing the Office of the Prime Minister, assisted by the representative of WACIP and CFC.

The seminar included the following presentations and speeches:

Project introduction by the managing director of CERFITEX, RTC Coordinator, Dr. Djibrilla Maïga: background, justification, project components;

Presentation by Mr. Jean Paul Gourlot on the reasons, objectives, activities, and impacts of the project on cotton sector stakeholders;

Presentation by Mr. Mamadou Togola on the RTC steering committee;

Presentation by Mr. Joël Rodolphe Ky on the need to bring laboratories up to standard testing conditions;

Presentation by Mr. Blaise Fadoegnon, Coordinator of WACIP Mali, on WACIP and its relationship with CERFITEX;

Presentation by Mr. Tiénan Coulibaly on the creation of the Cotton Classing Office;

Presentation by Dr. Aly Kontao on the reasons for and objectives of the Cotton Classing Office.

All the speeches were followed by questions and answers.

2.2. Creation of the Regional Technical Centers

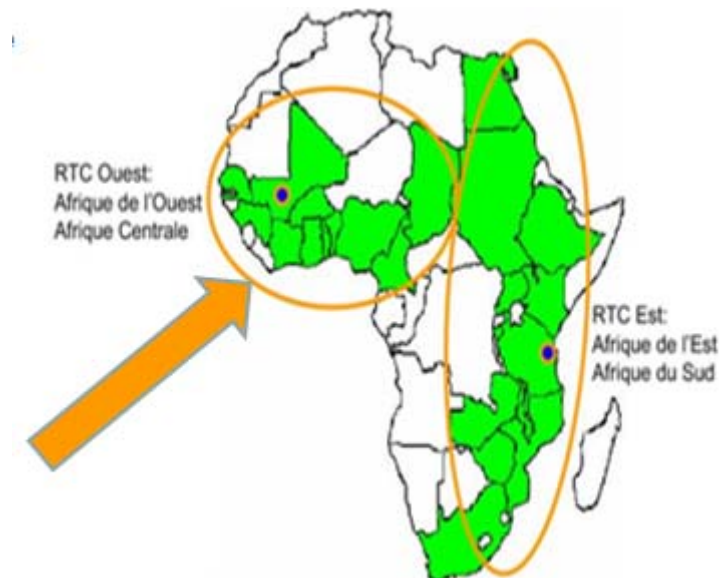
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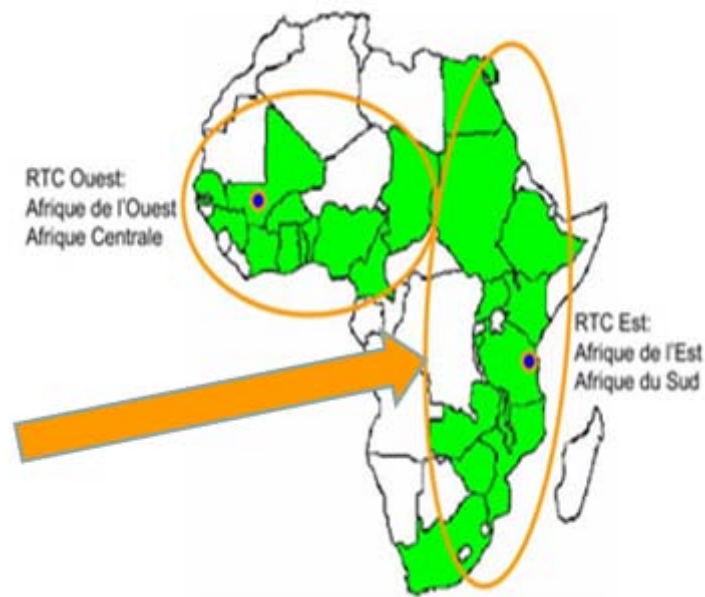
One of the significant outcomes of this project is the creation of two regional technical centers for instrument based cotton classing in Africa:

- The Regional Technical Center of West and Central Africa created within the Research and Training Center for the Textile Industry (*Centre de Recherche et de Formation pour l'Industrie Textile*: CERFITEX), located in Ségou, Mali, in connection with the Burkina Faso Textile Fiber Company (*Société Burkinabé des Fibres Textiles*: SOFITEX), for the West and Central Africa region.

This RTC covers the following cotton producing countries: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Ghana, Mali, Nigeria, Togo, and Senegal.



- The Regional Technical Center of East and Southern Africa created within the Tanzania Bureau of Standards (TBS), located in Dar es Salaam, in connection with the Tanzania Cotton Board (TCB), for the East and Southern Africa region. The countries covered by this center are: Ethiopia, Kenya, Malawi, Mozambique, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.



The mission of these entities is to serve as regional technical centers for instrument based cotton classing in Africa.

2.2.1. Objectives of the Regional Technical Centers

The objectives of the Regional Technical Centers were to:

- Provide necessary **technical and material assistance** to the cotton classing laboratories of African cotton companies in order to:
 - o Help them adopt and implement international criteria regarding the analysis of cotton quality,
 - o Enable them to satisfy these criteria, thus ensuring successful promotion of cotton fiber,
- Carry out **the mission of Standard Regional Technical Centers** in order to:
 - o Assist cotton classing laboratories in making the gradual and irreversible transition from traditional classing to instrument based classing,
 - o More effectively promote African cotton on the world market.



The inauguration of the West and Central Africa Regional Technical Center for Instrument Based Cotton Classing (*Centre Technique Régional de Classement Instrumental de Coton d'Afrique de l'Ouest et du Centre: CTCIC-AOC*) was held on June 3, 2010 in the presence of the representative of the Government of Mali, administrative and political authorities of the Ségou region, the managing

directors and commercial managers of all the cotton companies of West and Central Africa, representatives of cotton producer associations, and the project's technical and financial partners (CFC, EU, ICAC, CIRAD, COTIMES Afrique, WACIP, etc.).

2.2.2. Results

The CFC/ICAC/33 Project has achieved a number of results, including the following:

- Training of experts, directors and managers of cotton classing laboratories, CMI operators, and various cotton industry stakeholders (cotton producers and commercial managers of cotton companies),
- Development of cotton classing laboratory management procedures,
- Strengthening of interregional cooperation by organizing exchange visits between the West and Central Africa Regional Technical Center for Instrument Based Cotton Classing and the East and Southern Africa Regional Technical Center for Instrument Based Cotton Classing,
- Performance of verification testing and inter-laboratory testing and participation in the Bremen and CSITC Round Trials,
- Analysis of samples for cotton companies,
- Expert appraisal of cotton classing laboratories of West and Central Africa,
- Development and transmittal through ACA of draft agreements for collaboration to all the cotton companies targeted by the project,
- Collection and dissemination of technical information on the prerequisites of instrument testing by CMI on (www.csitc.org),
- Stimulation of cooperation between partners from different countries of the subregion,
- Awareness-raising for industry stakeholders concerning the complexity of classing cotton fibers,
- Study of intra-bale variability.

2.2.3. Conclusion

The main objective of the project for Africa was accomplished by creating two Regional Technical Centers. These two centers are fully operational. The experts of the Regional Technical Centers have been trained intensively and are carrying out the designated functions in each RTC. The staff of the cotton classing laboratories of cotton companies, commercial managers, and cotton producers have also been trained in the analysis and classification of cotton through Integrated Testing Lines (*Chaînes de Mesures Intégrées*: CMI) and in utilization of the results of instrument based classing in the cotton trade.

2.3. Preparation and installation of the support system for laboratories of West and Central Africa

2.3.1. Cotton testing laboratories of the West and Central Africa region

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Pinpointing all the entities responsible for analyzing cotton quality was the first step in preparing the list of relevant analytical laboratories. This activity was performed by CTCRIC-AOC in order to obtain maximum support in all the countries of the region during project implementation.

To prepare the cotton analysis laboratories of the region that need to satisfy the quality criteria for cotton testing, support for the installation of appropriate equipment was necessary (CMI not included). This support made it possible to bring certain laboratories of the region up to a more or less acceptable level.

To offer this essential support, the following steps were required:

- Questionnaire to assess the operational capacities of laboratories
- Audit of laboratories interested in instrument based analysis of cotton
- Recommendations for satisfying CSITC criteria
- Estimate of the material and financial support required
- Direct material support for necessary investments at laboratories
- Verification of completion of the necessary changes

2.3.1.1. Objectives

The stated objectives were to:

- Pinpoint all the entities responsible for analyzing cotton quality
- Prepare the cotton analysis laboratories of the region that need to satisfy the quality criteria for cotton testing
- Improve their cotton analysis capacities

2.3.1.2. Results

It was noted that, without major investments, some laboratories of the region would be unable to participate in some of the main activities of CTCRIC-AOC (regional inter-laboratory testing, re-testing, implementation of HVI testing procedures in controlled conditions, etc.) for lack of adequate infrastructure and equipment.

2.3.1.3. Conclusion

The provision of systems for measuring air temperature and humidity and for standard cotton testing in some cases and expert appraisal of air conditioning systems in other cases failed to produce the desired solutions.

However, a collection of addresses of the cotton companies of West and Central Africa was compiled (see Annex 1).

2.3.2. Structure and legal organization of CTCRIC-AOC

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Preparation of the structural and legal framework of CTCRIC-AOC is intended to meet the criteria for Commercial Standardization of Instrument Testing of Cotton (CSITC) in African cotton producing countries and ensure the system's sustainability after project completion.

Under the authority of the President of the African Cotton Association (ACA), a meeting of chief classers of West and Central African cotton companies, members of the “metrology and classing commission” of ACA, and CERFITEEX took place in Bamako on February 17-18, 2012.

This meeting was organized in order to prepare a draft agreement on collaboration between CERFITEEX and ACA for the continuation, by CERFITEEX, of the main activities of the West and Central Africa Regional Technical Center for Instrument Based Cotton Classing (*Centre Technique Régional de Classement Instrumental de Coton d’Afrique de l’Ouest et du Centre: CTRCIC-AOC*) of the CFC/ICAC/33 Project, as a standard technical center for the region, and to propose training modules to meet the needs of the respective cotton units.

After a thorough debate, the participants agreed to develop:

- A memorandum of understanding between CERFITEEX and ACA;
- A collaboration agreement between CERFITEEX and the cotton companies;
- Training modules.

At the close of the proceedings, the meeting participants:

- Adopted, after review and amendment, a final draft of the collaboration agreement between CERFITEEX and the cotton companies;
- Reviewed and adopted training modules.

2.3.2.1. Objectives:

The meeting objectives were to:

- Develop a draft memorandum of understanding between CERFITEEX and ACA;
- Develop a draft agreement between CERFITEEX and the cotton companies to:
 - o Ensure the post-Project future of CTRCIC-AOC through an arrangement negotiated with the cotton companies;
 - o Satisfy all individual or collective requests for services related to the mission assigned to CTR by the Project;
 - o Develop and adopt training modules that meet the needs of cotton units.

2.3.2.2. Results

At the end of the meeting, the following were developed:

- A memorandum of understanding between CERFITEEX and ACA;
- A collaboration agreement between CERFITEEX and the cotton companies;
- Training modules (See Annexes 3 and 4: CERFITEEX-ACA Memorandum of Understanding, CERFITEEX-Cotton Companies Collaboration Agreement).

2.3.2.3. Conclusion

The final documents (a draft memorandum of understanding between CERFITEEX and ACA; a draft agreement between CERFITEEX and the cotton companies; training modules to meet the needs of cotton units) elaborated after a thorough debate were then submitted for assessment by the President of ACA and will be signed by him at the next ACA meeting in Zimbabwe in March 2012.

2.3.3.Regional Technical Center facilities and equipment

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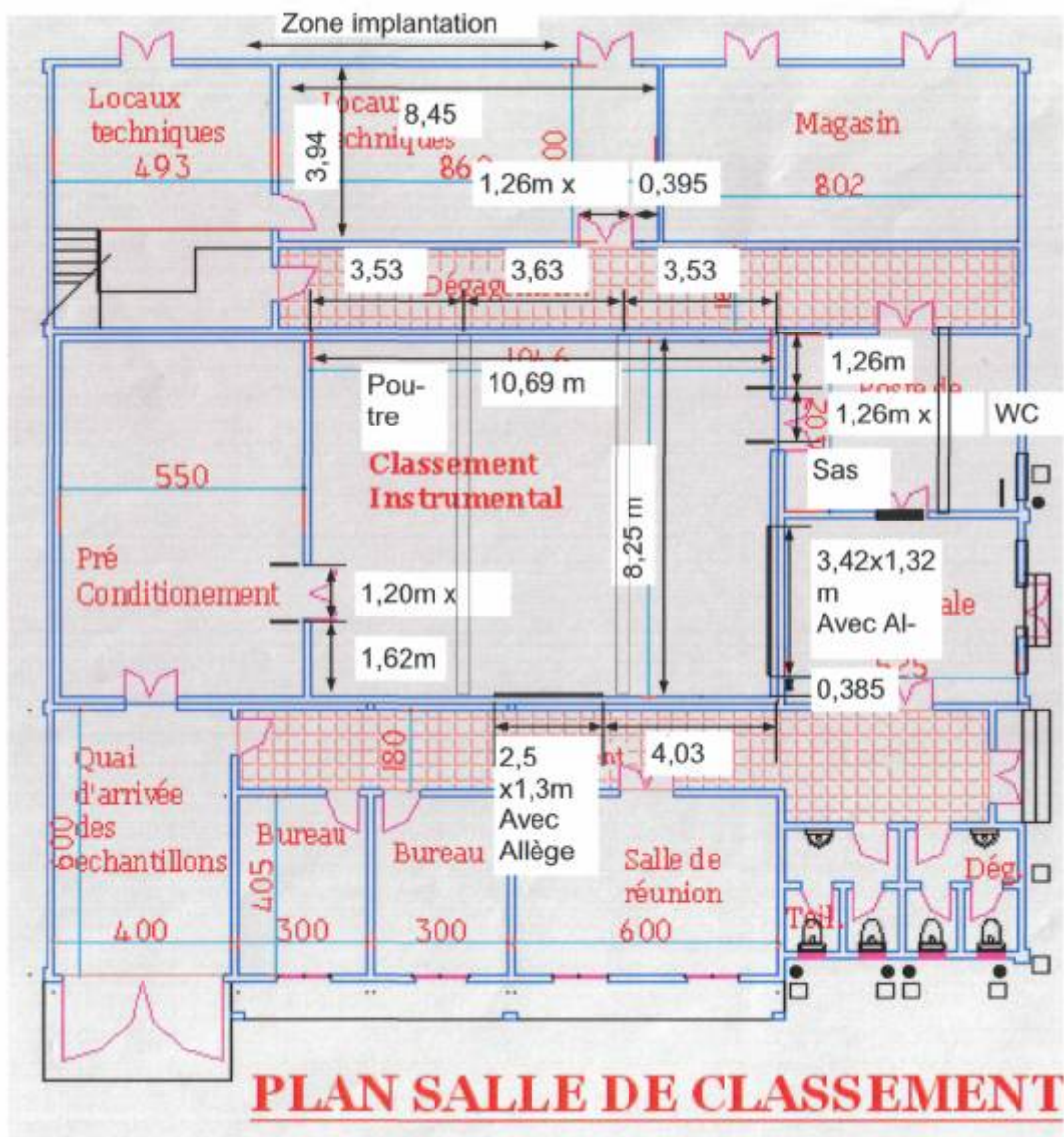
2.3.3.1. Construction of the CTRCIC-AOC laboratory

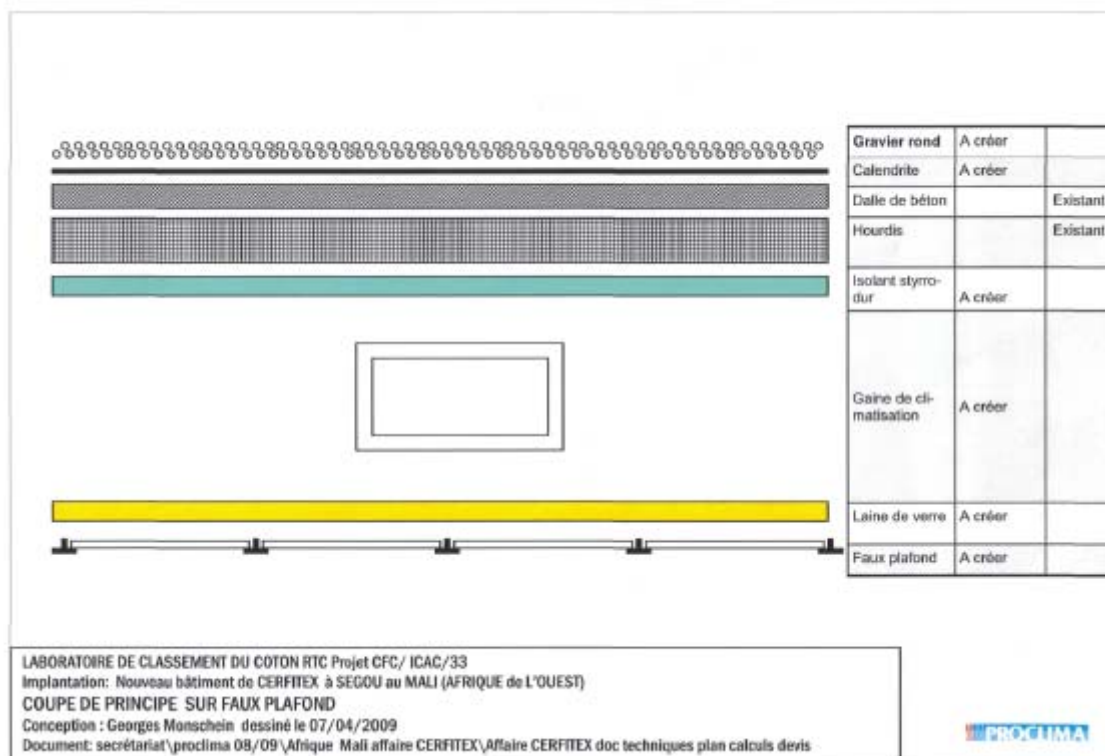
To give the Regional Technical Center the very best chance of success, CERFITEX built a laboratory that meets the recommendations of the WAEMU and UNIDO quality program, and, as a contribution, made it available to the CFC/ICAC/33 Project.

The laboratory has a footprint of 431m² and includes three air conditioned offices with split systems, a meeting and training room, a sample receiving room, a 44 m² pre-conditioning room, an 88 m² room for instrument based classing, an air lock, a warehouse for storing the samples, a technical facility for CTA (electric cabinet specific to CTA, steam humidifier, three-way control valve, water tank connected to the refrigerated unit outside in a small enclosed space; this facility is equipped with a split system for optimal functioning), a technical facility for the overall electric cabinet, and a roof made of several layers for thermal insulation and water protection.



CTRCIC-AOC laboratory building: dimensions (21.55 m x 20 m = a footprint of 431m²), with an 88 m² room for instrument based classing





Roof insulation diagram

The Regional Technical Center's instrument based classing laboratory is operational and offers the possibility of installing four other Integrated Testing Lines. It is outfitted by the CFC/ICAC/33 Project with the following equipment:

2.3.3.2. Installation of an Uster HVI 1000 M700 Integrated Testing Line (*Chaîne de Mesures Intégrées: CMI*)

An Uster HVI 1000 M700 Integrated Testing Line for analyzing samples collected in connection with the intra-bale variability study, coming from cotton companies and research centers for varietal improvement.



Uster HVI 1000 M700 Integrated Testing Line

2.3.3.3. Construction of shelving

Five shelves measuring 2.85 m in length x 1 m in depth x 1.75m in height are used for spreading out and conditioning the cotton samples before they enter the Uster HVI 1000 M700 Integrated Testing Line.



Shelves for conditioning the samples

2.3.3.4. Installation of the laboratory's air conditioning system

The laboratory's air conditioning system, composed of an Airwell-type refrigerated unit, an air-handling unit, and accessories to ensure air conditioning of the laboratory 24 hours a day. It has four air intakes or vent ducts and two outtakes.





Equipment of the laboratory's air conditioning system: refrigerated unit, air-handling unit, and accessories

2.3.3.5. Installation of the air compressor

One air compressor with a capacity of roughly 10 m³ air/hour supplies the laboratory equipment with compressed air.



Air compressor and dryer

2.3.3.6. Installation of the temperature and humidity recorders

An array consisting of five temperature and humidity recorders, Testo-type base for continuous recording of temperature and humidity in the classing room. The data from these recordings are stored on an office computer.



Temperature and humidity recorders, Testo-type base

2.3.3.7. Purchase of standard cotton boxes for calibrating the CMI

A set of standard cotton boxes are used to calibrate the Uster HVI 1000 M700 Integrated Testing Line.



Standard cotton boxes and tiles

2.3.3.8. Purchase of computer equipment and connection to the internet

Computer equipment with an internet connection (a portable computer, an office computer, a printer, office supplies, etc.) is used to support the work carried out in implementing the project activities.



Equipements informatiques

Computer equipment

2.3.3.9. Installation of a cotton fiber homogenizing machine

One cotton fiber homogenizing or mixing machine for preparing cotton samples destined for inter-laboratory testing at the regional level



Homogenizing machine

2.3.3.10. Purchase of a Toyota Hilux 4x4 Double Cabin Truck

A **Toyota Hilux 4x4 Double Cabin Truck** (diesel, air-conditioned, radio-cassette, power steering, 4-5 seats, 4 cylinders, 3000 cc, equipped with a safari bar) was acquired on September 29, 2008. The double cabin and the truck's wide bed combine the advantages of comfortable travel and the capacity to transport more cotton samples.



Toyota Hilux 4x4 Double Cabin Truck

2.3.3.11. Inauguration of the West and Central Africa Regional Technical Center for Instrument Based Cotton Classing (CTRCIC-AOC)

Inauguration of the West and Central Africa Regional Technical Center for Instrument Based Cotton Classing (*Centre Technique Régional de Classement Instrumental de Coton d'Afrique de l'Ouest et du Centre: CTRCIC-AOC*) on June 3, 2010. This inauguration provided the opportunity to inform cotton producer associations, cotton companies, varietal research centers, political officials, textile industries, and technical and financial partners about the existence of the Regional Technical Center and how this Center can help improve the competitiveness of the cotton industry.



CTRCIC-AOC inauguration ceremony

2.3.4. Training activities

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2.3.4.1. Training of experts

2.3.4.1.1. Objective:

The objective of the training of experts was to:

- Acquire necessary knowledge and skills from the project's technical partners,
- Ensure a smoothly functioning CTRCIC-AOC, so as to achieve the project's main objective,
- Ensure the quality of the analytical results and effective management of the CTRCIC-AOC laboratory.

The training included English courses, training on production, ginning, sampling, traditional cotton classing, spinning and textile processes, utilization of the CMI, technical instruction concerning the CMI, utilization of CMI analytical results, laboratory management, technical criteria to be met in the laboratory, laboratory quality management, visual classing of leaf grade and extraneous matter, computer courses on document preparation, data bases, analyses, etc.

2.3.4.1.2. Result:

Two experts were trained at each Regional Technical Center (*Centre Technique Régional*: CTR) to ensure proper functioning of the CTRs and smooth implementation of the project. The expert of the project's host organization was assigned the task of bringing the laboratories and project management up to standard.

The experts received in-depth training from international organizations during the four years of the project's existence, as described below:

2.3.4.1.3. Training received in 2008

Training contents for regional experts and staff

Participants: Mr Dominic H. Mwankangale

Mr Humphrey M. Shango

Mr Mamadou Togola

Mr Joel Ky

Training at Gdynia

From 4th to 10th February, 2008

- Description of the cotton quality assessment on the world market – current situation,
- Description of the Universal Cotton Standardization System for Upland Cotton (USDA),
- Training: manual medium staple cotton classification regarding: color, grade, leaf grade, preparation and extraneous matter (bark, grass, seed coat fragments, etc.),
- Interpretation of results from the HVI line and their comparison with results of manual classification – for the same sample,
- Principles of correct sampling,
- Weighing, taring, humidity defining, and calculation of commercial weight of cotton,
- Explanation of general trading rules used by the Gdynia Cotton Association,
- World cotton organizations – cotton facts

- Calculation of claim on the basis of value difference tables for a delivery deviation in quality from the contract conditions.

Training at FIBRE
From 11th to 23rd February, 2008

FIBRE:

- Cotton Testing Methods and Differences,
- Practical Experience on Different Cotton Testing Instruments,
- High volume cotton testing and influences on test results,
- Practical experience on Uster and Premier High Volume Instruments,
- Quality management according to ISO 17025,
- Laboratory necessities and room conditioning,
- Round Trials and Round Trial evaluation,
- Fiber Quality Measurements in 2025 and
- The overall duty travel was reviewed and re-arranged for convenience and cost factors consideration. Activity No.C.1.1.3.2 (b1) about Output intensive study.

BBB:

- Manual and Visual Cotton Classing, USDA cotton grades and leaf standards,
- Sample drawing for dispute settlements (quality claims) ,
- Different cotton grade standards from Africa, Asia, Europe and Central America and
- The ongoing process for the reviewing on the European Cotton Rules to conform to the International Cotton Association (ICA) rules.

USDA Cotton Classification Training Program
From 19th to 30th May, 2008

Universal Cotton Classification Standards

- HVI Standards Defined
- Grade Standards Defined
- Proper Utilization of Standards
- Production of Standards
- Governance of Standards

HVI Round Testing & Other Verification Programs

- USDA HVI Check Test
- USDA HVI Level Assessment
- HVI Check Program using In-House Cotton
- In-House HVI Round Testing Program (Check Lot Program)
- HVI Verification Programs: (8x8, 2x60, 6x8, 12x8)
- Acceptance Criteria for New HVI Systems (ASTM)

Cotton Classification Process

- Bale Sampling Procedure
- Sample Handling & Transportation
- Moisture Conditioning
- Classing Procedures

Manual Classification

- Leaf Grade Classification
- Extraneous Matter Identification

HVI Classification Procedures

- Operation

- Calibration
- Maintenance
- Troubleshooting
- Repairing
- HVI Support Equipment: Requirements & Maintenance

Classification Data Handling

- Networking of HVI's, Classer Terminals & Computer Systems
- Data Handling Procedures
- Reports
- Dissemination of Classification Data to Gins
- USDA National Cotton Database

Quality Assurance Procedures

- Classer and HVI Testing Procedures
- Evaluation of Classing Office Performance
- Performance Reports to Classing Offices
- Futures Contracts Cotton Testing Program

Market News Program

- Gathering of Market News Information
- Analysis of Data
- Reports Produced: Crop Quality, Spot Quotations, Market News Review, Etc.

Training at CIRAD, Montpellier From 23rd June to 5th July, 2008

- Laboratory conditions and surroundings
- About cotton and Cotton properties
- Instrument testing
- International standardization
- Laboratory organization
- Data management and Quality management
- Choice of properties for classing purposes
- Application to African conditions
- About variability
- Visit existing Quality management system
- Metrology
- Planned RTC system for Quality Assurance
- Computer tools to prepare training documents
- Links between cotton properties and price
- Method for expertise in the laboratories
- Method to organize regional round-test
- Methods to pass on a message during a training session
- Method to organize retest

Training at Uster Technologies-Knoxville, USA From 7th to 12th July, 2008

- Basic application training
- Uster Technologies – An Introduction
- HVI measurement principles

- Factors influencing test results
- Best operating practices
- Data analysis
- Introduction to HVI Testing:HVI1000
- Calibration principles
- Operating principles
- Frequently asked questions, basic troubleshooting
- Introduction to HVI Testing: HVI 900, HVI Spectrum
- Calibration principles
- Operating principles
- Frequently asked questions, basic troubleshooting
- Review, open questions

**Training at the Texas International Cotton School, Lubbock, USA
From 11th to 22nd August, 2008**

- Cotton production
- Fiber measurements
- HVI/ Testing/ Classing
- Utilization of HVI results
- Yarn/ Fabric/ Processing
- Neps contaminants
- Bale selection program
- Marketing Introduction & Overview
- Marketing government program
- Marketing Insurance
- Visits: Bayer Crop Science, PyCo Cottonseed Oil Mill, Farmer's Coop & Compress, Samuel Jackson, Inc. McNabb Farm and Buster's Gin, Ropesville, TX , American Cotton Growers Denim Mill, Littlefield, TX.

**Training at Premier, India
From 13th to 17th October, 2008**

- Basic application training
- Uster Technologies – An Introduction
- HVI measurement principles
- Factors influencing test results
- Best operating practices
- Data analysis
- Introduction to HVI Testing:HVI1000
- Calibration principles
- Operating principles
- Frequently asked questions, basic troubleshooting
- Introduction to HVI Testing: HVI 900, HVI Spectrum
- Calibration principles
- Operating principles
- Frequently asked questions, basic troubleshooting
- Review, open questions

2.3.4.1.4. Training received in 2009
Training at FIBRE, Germany
From 20th to 30th April, 2009

Participants: Mr Gervas KAISI
Mr Humphrey M. Shango
Mr Mamadou Togola

The training was organized in response to activity C.1.1.3.2 d
The Training Course content had the following Topics:

First week, 20th to 24th April 2009.

- Welcome agenda and Introduction of Mr. Gervas Kaisi
- Discussion of RTC trainings and knowledge about cotton testing.
- Preparation and improvements by trainees.
- Practical training (Laboratory visit at Bremen Cotton Exchange).
- CSITC website and Excel knowledge.
- Discussion about the future work of RTCs and Grand Openings.
- Discussion on MoU between RTCs and Labs to be prepared by FIBRE
- Exchange of project files and other documents

Second week, 27th to 30th April 2009.

- Introduction to Project administration works
- HVI practical information.
- Practical administration work.
- CSITC-RTC information.
- Check of knowledge (Practical exercise) on ;
 - a. Work Time Report (WTR)
 - b. Statement of Expenditure (SoE)
 - c. Summary report

Training at CIRAD, France
From 08th to 14th June, 2009

Participants: Mr Gervas KAISI
Mr Dominic H. Mwakangale
Mr Mamadou Togola

The training was conducted in response to activity C.1.1.3.2 e of CFC/ICAC/33 Cotton Project.

The Training Course content had the following Topics:

- Welcome and Introduction
- Brief report on the CSITC Project
- Revision on Annual Working Plan Budget (AWPB)
- Revision on how to use Excel budget file
- Component D 2.2 Budget, sample preparation and analysis
- Physiological study on the cotton fiber characteristics
- Review on the training documents for the staff from the RTCs regional laboratories and stakeholders
- Laboratory management and data transfer
- Study of the mixing machine for homogenization of the raw cotton for the RTC Round Trials
- Revision on preservation of technological characteristics of cotton fibers during ginning operations

**Training at the United States Department
of Agriculture (USDA), Memphis, Tennessee USA
From 27th to 31st June, 2009**

**Participants: Mr Gervas KAISI
Mr Dominic H. Mwakangale
Mr Joel KY**

The Training Course content had the following Topics:

- Overview of Agricultural Marketing Services(AMS) Cotton Classification Program
- Universal Cotton Classification Standards, HVI Round Testing and Other Verification Programs
- Cotton Classification Process
- Manual Classification, Classing Office Management and Training Programs
- HVI Technician Training
- Classification Support Equipment
- Quality Assurance Procedures
- Visit to Memphis Cotton Exchange in Cotton Museum

2.3.4.1.5. Training received in 2010

CSITC Project - Seminar in Bremen From June 14 to 18 the Fibre Institute Bremen conducted its third training for the African project partners of the CFC/ICAC/33 project “Standardization of Instrument Testing of Cotton for the Cotton Producing Developing Countries in Africa.”

Participants: Mr. Gervas Kaisi Mwanjabala, Quality Assurance Officer at the Tanzania Bureau of Standards / Regional Technical Center East and Mr. Rodolphe Joël Ky, Chief Classifier at SOFITEX in Burkina Faso / Regional Technical Center West Africa.

The training comprised quality management in cotton testing laboratories as well as the execution and evaluation of regional round trials and re-tests. Both Regional Technical Centers support the regional cotton testing laboratories by e.g. conducting trainings and giving expertise at the laboratories as well as analyzing and evaluating the test results of the laboratories.

TRAINING AT CIRAD MONTPELLIER IN FRANCE FROM 21ST -25TH JUNE, 2010

Participants

Mrs Maryam MBWANA, Tanzania Cotton Board, TCB (MB)
M. Joël KY, SOFITEX (JK).

The training was conducted between 21st and 25th June, 2010 in France at CIRAD in accordance with planned activity C.1.1.3.2 of CFC/ICAC/33 of the Cotton Project with the aim of knowledge enhancement on instrumental cotton classification.

Participants: RTC East/Southern Africa Mrs. Maryam Mbwana and RTC Expert from RTC West Mr. Joel Ky

THE TOPICS DISCUSSED

- CSITC activities for assuring the reliability of cotton instrument testing in Africa
- Another way to look at the Project
- Development of a list of requirements and basic principle

- Instrument Testing
- CSITC Round Trials + follow-up
- Variability results of homogenized cottons by a new laboratory homogenizing machine
- Preservation of technological characteristics of cotton fibers during ginning operations
- Variability study D.2.2
- Laboratory of SOFITEX
- General maintenance guide for all equipment used in cotton testing laboratories

2.3.4.1.6. Training received in 2011

In 2011, there was combined training of experts and technicians in their respective fields. The objective of these training activities was to enable the experts and technicians to acquire knowledge and skills from the Project's technical partners. The following activities took place:

TRAINING AT PROCLIMA IN FRANCE

FROM 14th to 17th June 2011

Participants: Mr Yamadou SISSOKO

A one week maintenance training for one technician included in the contract for the AAMS of CTR-AOC.

The training covered the following topics:

- Practical study on regulating an air processing unit
- Diagnosis of breakdowns, their causes, and their solutions
- Technical management of an air processing system

TRAINING AT CIRAD IN FRANCE

FROM 20th to 24th June 2011

Participants: Ms. Maryam MBWANA

Mr Dominic H. Mwankangale

Mr Yamadou SISSOKO

The training covered the following:

- Welcome, suggestions and agreement on the schedule of the week
- Organization of the following ;
 - Final seminar for closing the CFC/ICAC/33 Cotton Project
 - Current activities of the RTCs including re-tests, obstacles and reporting work
 - Trainings
 - Regional laboratory visits
- The future structure of the RTC
- Variability study
- Introduction to future project

TRAINING AT FIBRE-BREMEN IN GERMANY

FROM 27 June - 01 July, 2011

Participants: Mr Dominic H. Mwankangale

Mr Gervas Kaisi

Mr Mamadou Togola

Mr Joel Ky



The training covered the following:

- Welcome, suggestions and agreement on the schedule of the week
- ISO/IEC 17025 General requirements for competence of testing and calibration laboratories
- Organization of the following ;
 - Final seminar for closing the CFC/ICAC/33 Cotton Project
 - Current activities of the RTCs including re-tests, obstacles and reporting work
 - Trainings
 - Regional laboratory visits
- Financial information towards the end of the project
- Business Plan Consultancy debriefing
 - Debriefing
 - Legal structures of RTC East Africa and West Africa
- Final report of the CFC/ICAC/33 Cotton Project
- Introduction to future project

**TRAINING AT THE UNITED STATES DEPARTMENT OF AGRICULTURE,
MEMPHIS, TENNESSEE USA, 01 – 05 AUGUST, 2011**

**Participants: Ms. Maryam MBWANA
Mr Dominic H. Mwankangale
Mr Joel Ky
Mr Yamadou SISSOKO**



RTC Experts attending the class session

The Training Course consisted of the following topics:

- Overview of USDA Cotton Classification Program – James Knowlton
- Tour of Facility - James Knowlton
- HVI Data Management - James Knowlton
- HVI Round Testing Programs - James Knowlton
- Cotton Standards – Monte Mutchler
- Cotton Testing Procedures – Danny Martinez
- Routine Test Verifications - Danny Martinez
- HVI Calibration & Setup Procedures – Steve Grantham
- Testing Tolerances. – Gretchen Deatherage
- Qualification of Instruments -- Gretchen Deatherage
- Sightseeing
- Quality Assurance Procedures - Danny Martinez
- Lab Certification - James Knowlton / Gretchen Deatherage
- Understanding HVI Data – Steve Grantham
- Classification Support Equipment -Steve Grantham
- Developments/Future Direction of Cotton Classification – James Knowlton /Steve Grantham.
- Wrap-up and Open Discussion James Knowlton

TRAINING AT THE TEXAS INTERNATIONAL COTTON SCHOOL, USA²

FROM 08th to 19th August, 2011 at the

Fiber & Biopolymer Research Institute Texas Tech University.

Participants: Ms. Maryam MBWANA

Mr Gervas Kaisi

Mr Mamadou Togola

Mr Gustave ZONGO



From right; Mr. Mamadou TOGOLA-RTC West, Ms. Maryam Mbwana-RTC East, Mr. Gervas Kaisi-RTC East and Mr. Gustave ZONGO RTC West.

The Training Course content had the following topics:

- Cotton from field to fiber
 - Cotton production system
 - Cotton breeding program
 - Cotton harvesting
 - Cotton ginning
- Cotton fiber properties
- Cotton contaminants
 - Stickiness and other contaminants
- HVI
 - Testing and Classification
 - Utilization
- Yarn and Fabric Processing
 - Fiber to yarn
 - Yarn to fabric
 - Dyeing and Finishing
- Cotton bale selection
- Environmental issues
- Cotton marketing
 - Introduction and overview
 - Merchants role
 - Exporting
 - Government programs
 - Economic issues
 - Market promotion
 - Letters of credit
 - Insurance
- **Visits:**

The visits were made to; USDA classing office, MEL Tour, Bayer Crop Science, Farmer's Coop Compress, Samuel Jackson, Inc. McNabb Farm and Buster's Gin, Ropesville, TX, and American Cotton Growers Denim Mill.

2.3.4.1.7. Conclusion:

This important activity enabled CTCRIC-AOC experts to acquire the skills needed to perform their work.

14 training sessions already received by CTCRIC –AOC experts from partner international institutions of the CFC/ICAC/33 Project from 2008 to 2011.



Subsequent to their training, the experts have made use of regional training workshops to pass along the knowledge they acquired to cotton industry stakeholders in West and Central Africa. The following training activities have taken place:

2.3.5. Theoretical and practical training for CMI operators

Theoretical and practical training for CMI operators took place at CERFITEX, Ségou, Mali on December 22-26, 2008. Training participants:

Mr. Yamadou Sissoko (CERFITEX)

Mr. Hervé Somda (SOFITEX)

2.3.5.1. Objective

The objective of the training of two operators on the Uster HVI 1000 M1000 Integrated Testing Line of CERFITEX was to enable them to:

- Handle the HVI 1000 Line and conduct preventive maintenance operations
- Produce results consistent with international recommendations

- Detect CMI breakdowns and measurement errors

2.3.5.2. Training contents and program:

The theoretical training focused on the following:

- Information on the CFC/ICAC/33 Project
- Cotton and the technological characteristics of cotton fibers
- Laboratory organization, room requirements and conditioning
- Instrument based testing and measurement principles of Integrated Testing Lines (CMI)
- Factors influencing CMI results
- Inter-laboratory tests and re-testing

The practical training focused on:

- CMI operating instructions
- CMI calibration procedures
- CMI results
- CMI maintenance

Training program

No.	Training activities	Dates	Participants
1	Training from experts to HVI operators and technicians at CERFITEX, Ségou in Mali	22-26/12/2008	Mr. Yamadou Sissoko Mr. Hervé Somda
2	Maintenance training for one technician for the AAMS of CTCRIC-AOC at PROCLIMA, Montpellier in France	14-17/06/2011	Mr. Yamadou Sissoko
3	Training for regional experts and staff at CIRAD, Montpellier in France	14-17/06/2011	Mr. Yamadou Sissoko
4	Training for regional experts and staff at USDA-AMS, Memphis, TN, in USA	01-05/08/2011	Mr. Yamadou Sissoko
5	Training for regional experts and staff at Texas Tech University, Lubbock, TX in USA	08-19/08/ 2011	Gustave Zongo
6	Training for regional experts and staff at Cotton South Africa, in South Africa	12-16/09/2011	Mr. Yamadou Sissoko Cyrille Somé

2.3.5.3. Results:

Two operators trained in the analysis of samples from cotton companies and the analysis of samples used in the intra- and inter-bale variability study.

Conclusion:

One training session for operators/technicians provided by experts in 2008 and four sessions in 2011 with international institutions.

2.3.6. Training of cotton classing laboratory staff

The laboratory staff of cotton companies (chief classers and laboratory officials) received training at least twice a year from CTCRC-AOC experts.

Roughly eight to ten participants were selected for each training session.



Instrument based cotton classing operation with the Uster HVI 1000 Integrated Testing Line



Training sessions for cotton company staff

2.3.6.1. Objective:

The objective of these training sessions was to transfer knowledge acquired from international partners to the laboratory staff of West and Central African cotton companies and to share experience related to implementation of the project activities.

2.3.6.2. Results:

The laboratory staff of West and Central African cotton companies acquired knowledge concerning instrument based cotton classing and laboratory management in their respective fields.

Theoretical and practical training for the laboratory staff of West and Central African cotton companies focusing on instrument testing of cotton, its impact on the cotton value chain, and the complexity of the quality factor provided by Regional Technical Center experts: 4 sessions conducted



2.3.6.3. Conclusion

Four training sessions conducted by Regional Technical Center experts.

2.3.7. Training of industry stakeholders

This training was conducted by CTCIC-AOC experts for cotton industry stakeholders (producers, commercial managers), with a focus on instrument testing, reliability of the analysis, and its impact on the cotton value chain.

2.3.7.1. Objective:

The objective of this training was to enable the beneficiaries (commercial managers, cotton producers, cotton companies, etc.) to grasp the following advantages:

- Marketing of cotton fiber based on the results of reliable and comparable testing,
- Reduction of discounts and claims due to unknown properties,
- Improvement of cotton market share for African countries,
- Test results utilized to advantage at all stages of the textile processing chain.

2.3.7.2. Results:

The beneficiaries (commercial managers, cotton producers, cotton companies, etc.) learned about the importance of instrument based classing as a tool for promoting cotton on the world market.

- **Training of cotton industry stakeholders** (cotton producers and commercial managers of cotton companies)



2.3.7.3. Conclusion

Two sessions conducted by Regional Technical Center experts.

2.3.8. Laboratory expertise

The experts visited the analytical laboratories to provide advice and expertise, covering all the technical aspects of cotton classing rooms (equipment, conditioning system, availability of calibration cotton, laboratory environmental control, etc.). These visits take place twice a year.

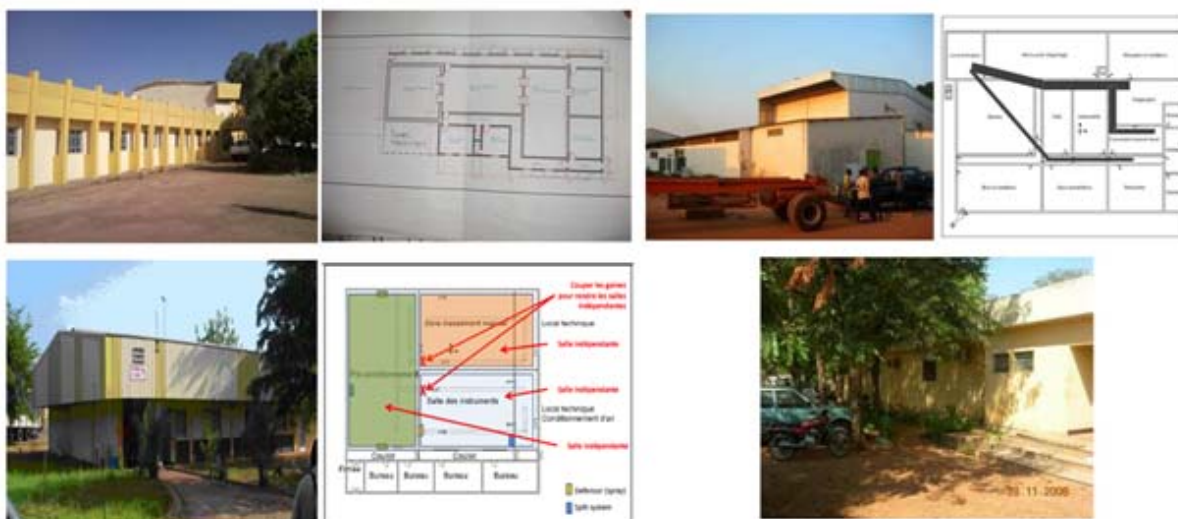
2.3.8.1. Objectives

The objectives targeted and achieved during these expert missions were to:

- Present the CSITC dynamic and the CFC/ICAC/33 Project,
- Conduct a quick overview of the region's laboratories,
- Record specific requests related to Regional Technical Center activities,
- Motivate laboratories to participate in CSITC inter-laboratory testing,
- Inform stakeholders of the existence of regional inter-laboratory testing, re-testing in the region and beyond,
- Announce the study of intra-bale variability of technological characteristics of cotton,
- Make recommendations, share experience, propose measures to be taken so laboratories will function properly, provide support and advice.

2.3.8.2. Results

Detailed expert reports were prepared each time and made available solely to the experts and the cotton companies, so as to respect the confidentiality of the information collected. Appropriate, customized responses were given to the laboratories.



2.3.8.3. Conclusion:

More than ten expert appraisal missions were conducted in the cotton classing laboratories of West and Central Africa.

2.3.9. Regional cooperation:

- Periodic exchanges on implementation of CFC/ICA/33 Project activities with our partners of East and Southern Africa
- Drafting and transmittal of collaboration agreements with ACA and all the cotton companies targeted by the Project
- Transfer of knowledge between different regions and an annual exchange between experts from different regions
- This activity provided the opportunity to respond to the most frequently asked questions

2.3.10. Monitoring and evaluation of CMI test results

2.3.10.1. Participation in CSITC Round Trials: in effect since 2010

- 5 inter-laboratory tests already conducted

2.3.10.1.1. Objective:

The objective of this participation was to perform each time a CTRCIC-AOC laboratory performance assessment:

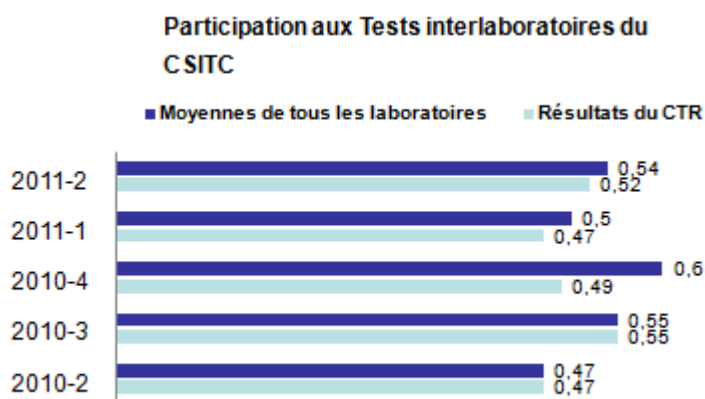
2.3.10.1.2. Results:

The results of the participation are indicated in the table below:

Your Instrument	Your Serial Number	Parameters Tested	Your Instrument No. in the	Your Summary Evaluation of	Median Evaluation of all Instruments in

			Evaluation Sheets	All Properties	this Round Trial
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	GL102-074-02	0.47	0.47
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	GL103-008-02	0.55	0.55
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	GL104-022-02	0.49	0.60
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	GL111-085-02	0.47	0.50
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	GL112-025-02	0.52	0.54
—	—	—	—	—	—

- **Results of participation in the CSITC Round Trials:** These results clearly indicate *the performance of the Regional Technical Center laboratory* in the five inter-laboratory tests already conducted since 2010.



2.3.10.1.3. Conclusion:

A certificate of participation was issued to each participant by the CSITC working group.



CSITC Round Trials → Tests inter-laboratoires du CSITC

Inscription:

Enregistrement

Par e-mail

csitcsecretariat@icac.org

2.3.10.2. Participation in Regional Round Trials:

2.3.10.2.1. Objective:

The objective of an inter-laboratory test is to examine the precision and accuracy of periodically reviewed laboratory results and to verify satisfactory performance. Regional inter-laboratory testing made it possible to draw comparisons based on cottons that are usually tested in the laboratories instead of cottons from other continents.

CTRCIC organized the inter-laboratory tests, starting with four inter-laboratory tests per year.

2.3.10.2.2. Results:

Variations in the results of the participating laboratories were insignificant. These tests were well received by the laboratories (see number of participating laboratories in the table below).

Your Instrument	Your Serial Number	Parameters Tested	Your Instrument No. in the Evaluation Sheets	Participating laboratories
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2010-1 RTC West	5
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2010-2 RTC West	6
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2010-3 RTC West	7
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2010-4 RTC West	6

Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2011-1 RTC West	6
Uster HVI 1000 M700	810110	Mic, Str, Len,Unf, Rd,+b	CSITC RTW 2011-2 RTC West	7

2.3.10.2.3. Conclusion:

6 inter-laboratory tests already conducted since 2010 on cottons produced in the region.

2.3.10.3. Verification tests or re-testing

Re-verification of testing is a way to monitor the daily performance of laboratories in the subregion and their capacity to produce precise and accurate test results within the context of their commercial activities.

This activity should be organized in addition to inter-laboratory testing. CTCRC-AOC should re-test a predetermined proportion of samples tested by the laboratories in order to prove the reliability of their daily analyses. However, this activity could not be carried out because of numerous constraints (timely transport of samples from the cotton classing rooms to the CTCRC-AOC laboratory, lack of a conditioning system in certain laboratories, etc.). Nevertheless, procedures were developed by the experts for this purpose (see Annex 2).

2.3.10.4. Analysis of samples for cotton companies:

- **3,934 cotton samples already analyzed** for cotton companies, as follows:
 - 885 samples for SOFITEX in 2010,
 - 1,007 samples for CMDT in 2011,
 - 2,042 samples for CMDT from January 5, 2012 until now.

2.3.10.5. Study in progress concerning the intra-bale variability of technological characteristics of cotton fibers:

- **17,091 cotton samples** already tested at the Regional Technical Center, as follows:
 - 9,952 samples in 2009,
 - 6,047 samples in 2010,
 - 1,092 samples in 2011.

2.3.10.6. Capacity building:

- **Gathering and dissemination of technical information**
 - Exchanges of technical information: All technical information related to the activities carried out under the CFC/ICAC/33 Project is available at www.csitc.org.

2.3.11. Services offered to cotton companies

In addition to actions aimed at building the technical capacities of the laboratories of the region's cotton companies, the latter can benefit from the following specific support:

- Support services from *CTRCIC-AOC* as part of an approach to validate the results of traditional (manual and visual) classing, and
- Monitoring of ginning operations.

Since the stated objective of most of the cotton companies is to move gradually toward classing 5 to 10 percent of production through instrument testing, *CTRCIC-AOC will serve as a back-up structure.*

As such, the Center offers the following services:

- Training of laboratory staff of West and Central African cotton companies, all categories: *4 sessions per year*
- Training of cotton industry stakeholders: *2 sessions per year*
- Laboratory expert appraisals: *10 expert appraisal missions to be conducted per year* in the cotton classing laboratories of West and Central Africa
- Commercial classing of cotton for cotton companies with the potential to analyze *more than 60,000 samples per year*
- Verification tests (re-testing) with the potential to analyze *more than 17,000 samples per year*

The conditions for delivering these services are set forth in the future collaboration agreement. The framework for this collaboration will be determined by mutual agreement with ACA and the partner cotton companies of the West and Central Africa Regional Technical Center.

Table 1: Results of CFC/ICAC/33 Project Implementation in West and Central Africa

Results	Responsible Entity	Beneficiaries
1. Laboratory construction Construction of a new referral laboratory for instrument based classing of cotton	CERFITEX	Cotton industry stakeholders (cotton companies, varietal improvement research stations, textile businesses, etc.)
2. Staff An 8-person team was formed and made available to the Project	CERFITEX	CFC/ICAC/33 Project
3. Equipment Equipment for the referral laboratory (Uster HVI 1000 M700 Integrated Testing Line, air conditioning system, five devices for measuring and controlling temperature and humidity, cotton homogenizing unit, computer equipment)	CFC/ICAC/33 Project	Cotton industry stakeholders (cotton companies, varietal improvement research stations, textile businesses, etc.)
4. Training activities Training of: <ul style="list-style-type: none"> ▶ 2 experts from 2008 until now ▶ 2 Integrated Testing Line (CMI) operators in 2008 ▶ 2 laboratory technicians in the instrument based classing of cotton ▶ 25 chief classers from cotton classing laboratories (8 chief classers in 2009 and 17 chief classers in 2010) ▶ 32 classing laboratory managers (12 managers in 2009 and 20 in 2010) 	CFC/ICAC/33 Project	Staff of cotton fiber marketing companies, gin operators, and producers

<ul style="list-style-type: none"> ▶ 15 cotton industry stakeholders (10 producers in 2009 and 5 commercial managers of cotton companies in 2010) 		
5. Expert appraisal of classing laboratories Expert appraisal of 10 West and Central African cotton classing laboratories from 2008 to 2010	CFC/ICAC/33 Project	Laboratories of cotton companies
6. Inter-laboratory tests Participation in 7 CTCIC-AOC Regional Round Trials, 9 Bremen Round Trials, and 10 CSITC Round Trials	CFC/ICAC/33 Project	Laboratories of cotton companies
7. Organization of inter-laboratory tests at the regional level Organization of inter-laboratory tests at the regional level: in effect since 2009 (7 Round Trials already conducted)	CFC/ICAC/33 Project	Laboratories of cotton companies
8. Organization of verification tests Organization of verification tests or re-testing (activity started late 2009, 200 samples tested)	CFC/ICAC/33 Project	Laboratories of cotton companies
9. Analysis of samples Analysis of 2,223 samples for cotton companies (885 for SOFITEX in 2010 and 1,338 for CMDT in 2011)	CFC/ICAC/33 Project	Cotton companies
10. Support for laboratories <ul style="list-style-type: none"> ▶ Four boxes of calibration cotton for length/tenacity and micronaire made available to the laboratories of SONAPRA/AIC (Benin), CMDT-OCC (Mali), SODEFITEX (Senegal), and NSCT (Togo) ▶ Five laboratories equipped with devices to measure and control temperature and humidity 	CFC/ICAC/33 Project	Laboratories of cotton companies
11. Inter-regional cooperation Organization of 6 exchange meetings between CTCIC-West and Central Africa and CTCIC-East and Southern Africa	CFC/ICAC/33 Project	Regional Technical Centers
12. Study of variability Study of intra-bale variability (17,091 samples tested: 9,952 in 2009, 6,047 in 2010, and 1,092 in 2011)	CFC/ICAC/33 Project	Cotton companies
13. Collaboration agreements <ul style="list-style-type: none"> ▶ Signing of the collaboration agreement with SODEFITEX (Senegal) ▶ Development and transmittal through ACA of draft agreements for collaboration to all the cotton companies targeted by the project 	CERFITEX/SOFITEX	Cotton companies