OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

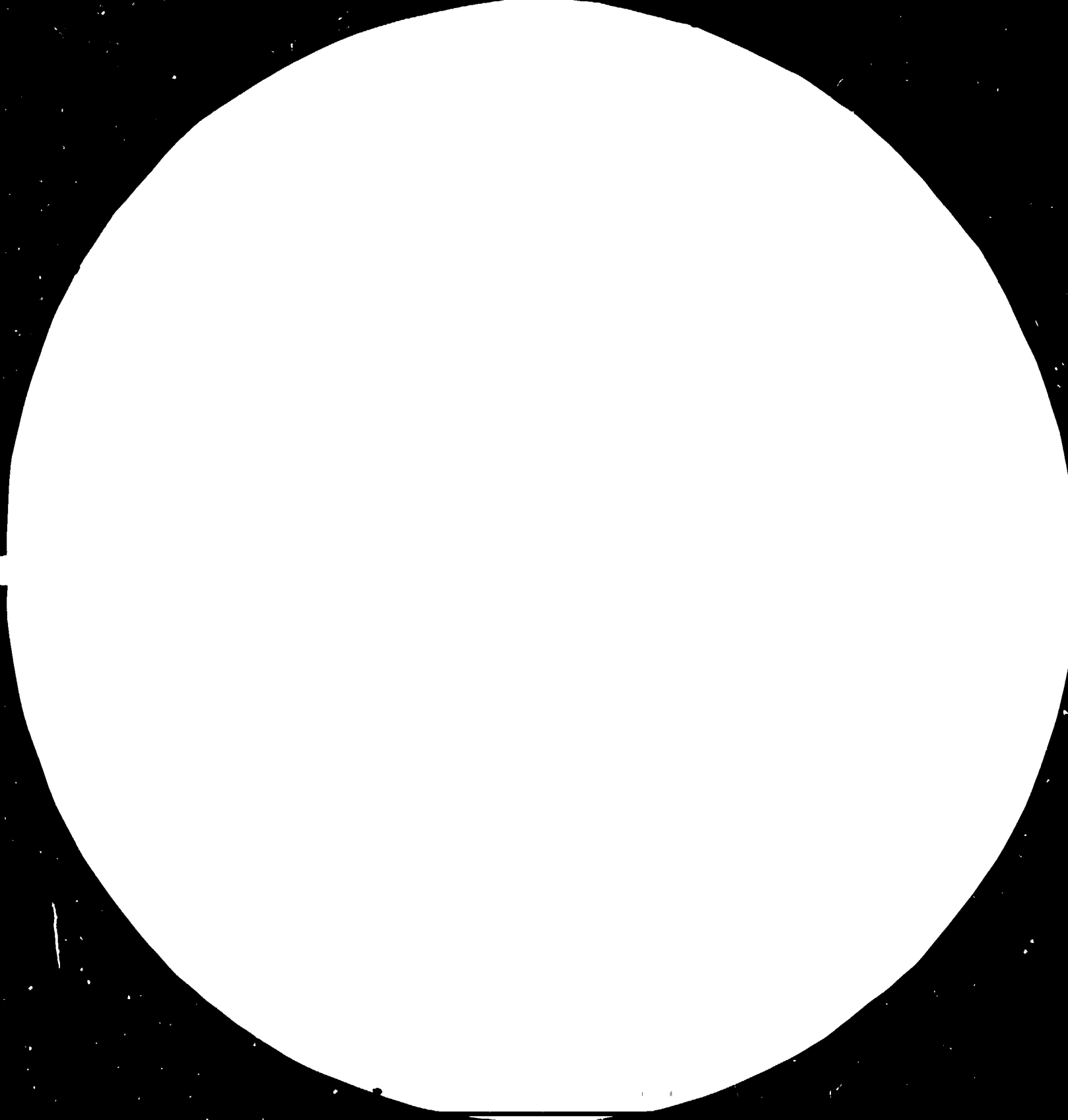
Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

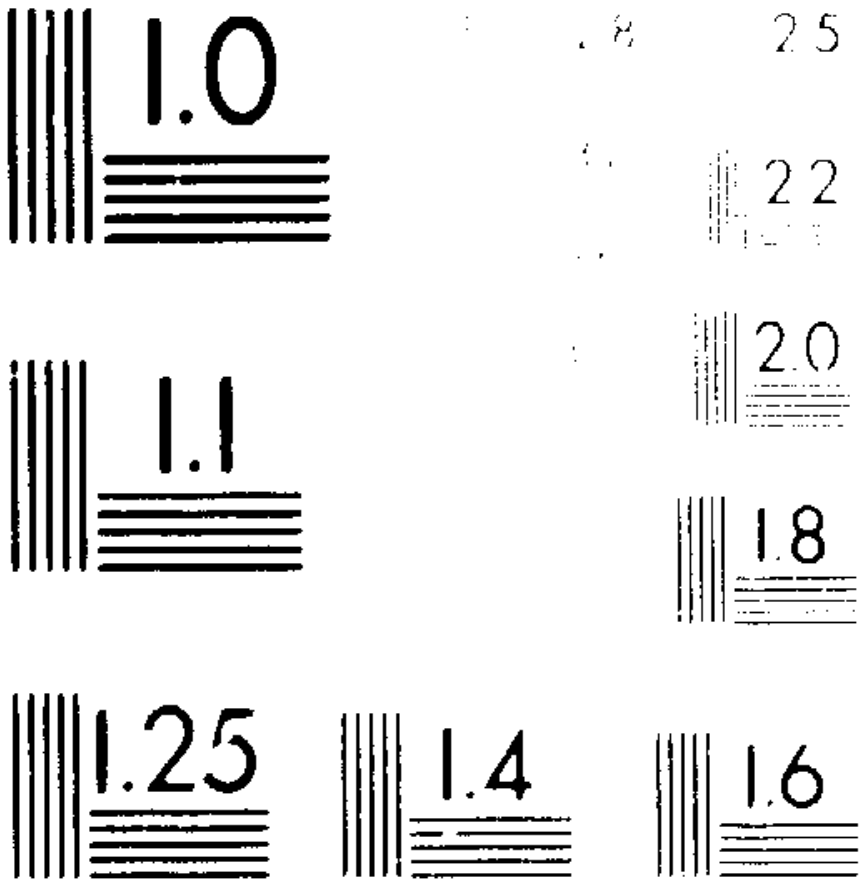
CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org




1.0
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

Distr.
RESTRICTED

UNIDO/IO/R.149
11 February 1985

ENGLISH

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Workshop on the Production of
High-Quality Cotton Knitgoods*

Mexico City, Mexico, 19-23 November 1984

REPORT**. (Workshop on production of cotton knitgoods)

*Organized by the International Institute for Cotton (IIC) and the United Nations Industrial Development Organization (UNIDO)

**This document has been reproduced without formal editing.

V.85-22246

1416

TABLE OF CONTENTS

Background

Cotton accounts for approximately 48% of world consumption of major textile fibres. It is grown in about 70 developing countries including 16 of the 31 countries classified in 1980 by the United Nations as "lease developed". For many of these countries it is a key commodity. The total value of the exports of raw cotton and cotton seed products was about $ 570 million in 1980-81 (IMF data).

The share of the developing countries in the growth of world cotton production is increasing. Over the last 20 years the average production of the developing countries has risen by approximately 50%, whereas the production of the developed world has declined by 6%.

Cotton is one of the most important generators of employment and economic activity in the Third World. It is estimated that at least 125 million people (cotton farmers, farm workers and their dependents) in the developing countries derive their livelihood from growing and handling raw cotton. A high proportion of these people live in countries where unemployment and under-employment are problems of the highest priority.

Cotton provides the spearhead of industrial development for many countries of the Third World. Some 45-50 million people are dependent on the jobs which have already been created by the rapidly developing cotton textile processing industries in these countries. In order to ensure maximum employment in the rural areas of the cotton producing countries it is essential that their textile industries continue to use cotton as their basic raw material.

Cotton and cotton products provide the developing nations with a major source of foreign exchange. The annual value of the combined exports of raw cotton, cotton seed products and cotton textiles from the developing countries is currently about $ 7.000 million. Raw cotton and cotton seed products ranked either first or second in importance as agricultural export earners in about 22 developing countries in 1979/80 and accounted for more than 20% by value of agricultural exports in 15 of these countries.

Cotton is also an important source of food. The cotton seed is the world's fourth most important source of edible oil and the meal provides a valuable cattle food. If fully utilized it could provide 5-6% of the world's total requirements of crude protein.

The growing, processing and exporting of cotton and its products provides an almost ideal means of social and economic development and it is not therefore surprising that the development plans of many of the developing nations are based on the assumption that production of cotton and cotton textiles will remain a major growth factor in their economies. These plans could, however, be frustrated if they had to compete between themselves for a static or declining market.

Although world demand for textiles is forecast to expand at an average of about 2.5% per year it does not follow that cotton will automatically share in this expansion. The man-made fibres have already captured major sections of the market and, although in absolute terms raw cotton production is at record levels, cotton's share of world fibre consumption has dropped from 72% in 1954 to about 48% in 1980.

Encouraged by their great advances in the 1960's, the man-made fibre producers embarked on massive expansion programmes aimed at capturing an even greater share of the world's textile markets, including the local textile markets of the cotton producing countries themselves.

The Technical Research Division of the International Institute for Cotton (IIC) was set up in 1967 to undertake technical activities necessary to safeguard cotton's position in world markets. Much of its work is concentrated on products or processes which offer the greatest growth potential for cotton and on solving problems which, if unresolved, might lead to loss of markets. In order to remain competitive it is absolutely essential to upgrade the performance of the product at every level.

One of the areas which offers considerable growth potential for cotton is knitted outerwear. There is a strong consumer demand for garments which combine comfort and fashion appeal and which conform to the more relaxed life-style of today. Cotton has always enjoyed great popularity in knitted underwear. The production processes and performance standards for underwear are relatively undemanding but the production of high-quality, dimensionally stable cotton outerwear in attractive colours and fashionable styles introduces completely new considerations. The cotton processor is often faced with unacceptable uncertainties in attempting to produce in volume for the new market.

About four years ago IIC's Technical Research Division, with substantial financial support from the Overseas Development Administration of the UK Government, embarked on an in-depth programme involving extensive full-scale trials and development work, aimed at putting the manufacture of knitted cotton fabrics on a sound technical base, thus encouraging the production of high quality products by a larger number of companies.

The project established quantitative relationships between the knitting parameters, the finishing route and the final product performance for the most important cotton knit constructions. The enormous body of data which was generated (over 1.000 separate fabric samples were produced) has been converted into a variety of programmes which can be handled by semi-skilled personnel on inexpensive computers. Thus, for example, whenever there is a change either in customer specifications or in the finishing process, the knitter can quickly calculate, without resorting to trial and error, what his new knitting parameters should now be. In this way manufacturing risks, development time and cost can be very much reduced and new markets can now be opened up in knitted outerwear from which cotton has hitherto been exluded.

Implicit in the agreement with the ODA was the obligation to disseminate this new knowledge as widely as possible in both developed and developing countries so as to create new markets for cotton and thereby increase cotton utilization to the benefit of the producing countries. Cotton processors in other countries are now showing an interest in this work and the time is opportune to make this knowledge available to processors in the developing world.

During the course of its work IIC acquired a great deal of experience and information on many aspects of knitgoods production and this too should be made available to knitters in the developing countries some of whom may not yet aspire to the production of sophisticated knitter outerwear.

Financed by the UK Government's Special Purpose contribution to UNIDO, the IIC organized, in April 1984, a seminar in Manchester to discuss recent developments affecting quality and efficiency in the processing of cotton knitgoods. These included the results of recent research and development work by IIC and demonstrations of the Institute's computerized predictive models, designed to reduce time spent on empirical trials and to ensure greater consistency of product quality.

As a follow-up of the seminar a workshop was organized at the South India Textile Research Association (SITRA) in Coimbatore, India from 15 to 19 October 1984. It was conducted by two IIC experts Mr. R.D. Leah and Mr. J.T. Eaton. SITRA was responsible for the organization of the workshop and its technical staff assisted in the practical demonstrations that formed part of the workshop.

A second workshop was held in Mexico City from 19 to 23 November at the premises of the Camara Nacional de la Industria Textil (CANAINTEX). It was also conducted by Mr. Leah and Mr. Eaton.

Conclusions

The knitting and finishing facilities installed in Mexico and in the other countries represented at the workshop are in general far more sophisticated than those available in India. Nevertheless, it was again the importance of quality control at all stages of manufacture which proved to be of greatest interest to participants to the Mexican workshop. The IIC experts explained what factors needed to be controlled, how such control could be achieved and what quality improvements could be expected. This information was readily accepted and will undoubtedly be put into practice by the participants.

The IIC computer programme certainly caught the imagination of the participants and all were keen to explore its potential for their own fabrics. The fact that most participants did not have sufficient data about their own production (e.g. stitch length, number of needles, yarn count) for correct computer inputs vividly demonstrated the need to measure and control all essential production parameters accurately in order to make use of the system.

All participants contributed actively to the workshop and there were many animated discussions in both Spanish and English. All agreed that they had a great deal to learn about the production of high quality knitgoods and were determined to extract as much information as possible from the experts during their stay in Mexico City.

Follow-up

All participants were given sufficient advice, copies of test procedures and other information for them to be able to embark upon the appropriate quality control measures very quickly.

However, the provision of a continuing service to the industry by the CANAINTEX is very uncertain for several reasons. No one from the CANAINTEX attended the workshop sessions or appeared to show interest in, or appreciation of the value of the information provided. At the present time, the laboratory personnel at the CANAINTEX are not conversant with the test procedures although they now have the necessary equipment.

The computer and its special programmes are housed in the CANAINTEX, and several of the local participants indicated that they would go to the CANAINTEX personally to make use of the predictive model.

In principle the CANAINTEX should be an appropriate body to provide a central technical service but they would first have to recruit a number of personnel with the necessary interest and expertise. Should the CANAINTEX - or some other national organisation - wish to take this course of action, IIC and UNIDO will be glad to provide advice and help.

ANNEX I

WORKSHOP

ON

THE PRODUCTION OF HIGH QUALITY KNITGOODS

CANAINTEX

NOVEMBER 19-23, 1984

LIST OF PARTICIPANTS/OBSERVERS

Name of Participants	Organization	Country
1. Rego, M.A.	Industrial Textile Cia Hering	Brazil
2. Rena, G.C.	Centro de Tecnologia da Industria Quimica e Textil (CETIQT)	"
3. Vinchira, G.	Servicio Nacional de Aprendizaje (SENA)	Colombia
4. Aguilera Casados, C.	Texlamex S.A. de C.V.	Mexico
5. Graullera T[illegible], R.	Texlamex S.A. de C.V.	"
6. Guadalupe Arias, M.	Hilados y Tejidos El Cedro, S.A.	"
7. Molina, C.	Textiles Electronicas, S.A.	"
8. Vazquez Torres, I.	Hilados y Tejidos El Cedro, S.A.	"
9. Vidal, M.	Zaga Hermanos, S.A.	"
10. Amaya, G.	Textiles Populares S.A.	Peru
Observers		
1. Glaux, A.	Complejo Textil Grocio Prado S.A.	Peru
IIC		
Leah, R.D.	International Institute for Cotton (IIC)	UK
Eaton, J.T.	International Institute for Cotton (IIC)	UK

ANNEX II

PROGRAMME

DAY 1 - Monday - 19th November

09.30 - 11.00	-	Introduction and Welcome Mr. Jose Ramon Ortiz Monasterio, CANAINTEX Mr. Antero Eraneva UNIDO Mr. Julian Rodriguez Adame IIC Short summary statements by the Delegates
11.15 - 12.00	-	Framework for Action
12.00 - 12.30	-	Terminology
12.30 - 13.30	-	Adjusting and monitoring quality on the knitting machine
15.30 - 17.30	-	Practical demonstrations 1. Measurement of yarn count on cone 2. Measurement of stitch length from fabric 3. Measurement of yarn count from fabric Discussion

DAY 2 - Tuesday - 20th November

09.30 - 11.00	-	Knitting to Specification
11.15 - 13.30	-	Quality of local yarns Useful yarn tests
15.30 - 17.30	-	Practical Demonstrations 1. Courses and wales 2. Weight 3. Single end strength (yarn strength) 4. Spirality 5. Shrinkage 6. Twist 7. Burst strength (fabric strength) Discussion

DAY 3 - Wednesday - 21st November

09.30 - 11.00	-	The European Market Video - quality control
11.15 - 12.15	-	Setting Finishing Targets

DAY 4 - Thursday - 22nd November

09.30 - 11.00	-	Achieving the finishing targets in practice
11.15 - 12.15	-	Introduction to "STARFISH"
12.15 - 13.30	-	Discussion
15.30	-	STARFISH - Application - Practical demonstrations on computer Discussion

DAY 5 - Friday - 23rd November

09.30	-	New developments. Dyeing and finishing
10.30 - 11.30	-	New developments. Knitting
11.45 - 12.45	-	Mercerising
12.45 - 13.30	-	Discussion
15.30 - 17.45	-	Garment making Final discussions Conclusions.