



# CICR Annual Report

2006-07

वार्षिक रिपोर्ट



**CENTRAL INSTITUTE FOR COTTON RESEARCH, NAGPUR**  
**केन्द्रीय कपास अनुसंधान संस्थान, नागपुर**



### Central Institute for Cotton Research

Post Bag No.2, Shankar Nagar, PO,  
Nagpur 440010 (MS), India  
Tel. No.: (07103) 275536/275549/275617  
Fax: (07103) 275529  
e-mail: [cicmgn@rediffmail.com](mailto:cicmgn@rediffmail.com) 1  
[cicmgn2003@yahoo.co.in](mailto:cicmgn2003@yahoo.co.in)  
web site: <http://www.cicr.org.in>

---

#### Published by

**Dr. B. M. Khadi**

Director

Central Institute for Cotton Research

Post Bag No.2, Shankar Nagar,

PO, Nagpur - 440010 (MS), India

---

#### Editorial Committee

Dr. B. M. Khadi

Dr. MRK Rao

Dr. K. R. Kranthi

K N Gururajan

---

#### Compilation, Collation and Production

Dr. Mahendra Singh Yadav

---

#### Assistance

**Hindi Version**

Dr Ram Ratan Gupta

**Computer Composing**

Sh. Samir S. Chalkhure

---

#### Correct Citation

CICR, Annual Report 2006-2007

Central Institute for Cotton Research, Nagpur, India

PP. 111

---

**Front Cover:** Left : *Intra-hirsutum* hybrid CSHH238  
Right: *G. arboreum* variety CISA -310

---

#### Note:

- No part of this report shall be reproduced without permission of ICAR/CICR.
- The reference to some trade names in this report is in no way an endorsement of or discrimination against these products by the Institute.

---

#### Printed At:

Surya offset, Ramdashpeth, Nagpur

---





## PREFACE

Cotton is a very important cash crop for Indian farmers and contributes around 30% to the gross domestic product of Indian agriculture. Around 280 lakh bales of cotton was produced during the year 2006-2007 with a productivity of 520 kg lint/ha. In spite of many limitations cotton productivity is increasing every year during the last few years. This is primarily due to the adoption of transgenic cotton hybrids and improved production and protection technologies including highly productive and quality cottons. This report covers the results of research work done at CICR during 2006-07.

The *intra-hirsutum* hybrid CSHH 238 and *G. arboreum* variety CISA 310 were notified by the Ministry of Agriculture, Government of India for commercial cultivation under irrigated conditions of North Zone. Another *intra-hirsutum* hybrid CSHH 243 was identified for release under irrigated conditions of North Zone. Four germplasm lines having unique characters were registered with N8PGR, New Delhi. The transgenic cotton varieties/hybrids (with Bt gene) were tested under RCGM trails and the follow-up action will be initiated in the coming years. Concrete efforts were made to improve water use efficiency of cotton under irrigated and rainfed conditions through improved agronomic practices. Studies were conducted on various aspects such as integrated nutrient management, inter-cropping, tillage and promising results were obtained in terms of lowered cost of cultivation and higher monetary returns. Integrated methodology for assessing regional level cotton production (including the use of remote sensed database, GIS and Cotton Crop Simulation Model (INFOCROP-Cotton)) was developed and validated. In the field of crop protection basic studies were conducted on *cry 1 Ac* resistance development and primers were designed for the characterization of susceptibility / resistance to *cry 1 Ac*. IRM strategies were disseminated to more than 70000 farmers covering an area of 1.31 lakh ha across 33 districts in the country. Proven technologies were effectively demonstrated and disseminated through FLD programme at all the three centers. A plant polyclinic was established at Rangri village in Haryana along with prototype IPM farm. In-depth basic/ molecular level studies on biotic and abiotic stresses were undertaken. Considerable progress has been made in the development of diagnostic kits. New research programmes were initiated to tackle the emerging issues in 8t cotton cultivation. All these were successfully accomplished due to the systematic and concerted efforts of my colleagues and support from Indian Council of Agricultural Research, New Delhi.

I am highly grateful to Dr. Mangala Rai, Secretary DARE and Director General, ICAR and Dr. Gautam Kalloo, Deputy Director General (Crop Sciences), ICAR, New Delhi for the guidance provided and also for encouraging new research initiatives.

I am placing the Annual Report (2006-07) with a sense of satisfaction for public scrutiny.

( B.M.Khadi )  
Director



## CONTENTS

### Preface

1. कार्यकारी सारांश.....	1
2. Executive Summary.....	9
3. Introduction .....	15
4. Research Achievements.....	21
4.1 Cotton Genetic Resources.....	21
4.2 Hybrid Cotton.....	24
4.3 Genetic Improvement .....	28
4.5 Genetic Diversity through Introgression.....	32
4.6 Development of Transgenics .....	32
4.7 Molecular Breeding .....	35
4.8 Seed Production and Seed Quality Improvement .....	36
4.9 Integrated Nutrient Management.....	38
4.10 Integrated Water Management .....	39
4.11 Conservation Tillage.....	41
4.12 Cotton Based Cropping Systems.....	42
4.13 Bt Cotton Production.....	43
4.14 Ergonomically Efficient Implements for Cotton Production.....	45
4.15 Production Physiology.....	45
4.16 Stress Physiology.....	47
4.17 Social Dynamics of Cotton Production .....	49
4.18 Cotton Economics and Marketing .....	49
4.19 Pest Scenario.....	50
4.20 Resistance to Insect Pests and Diseases in <i>Gossypium</i> spp.....	51
4.21 Variability in Insect Pests and Pathogens.....	54
4.22 Development of Molecular Tools.....	56
4.23 Epidemiology.....	60
4.24 Management of Pests.....	61

<b>5. Technologies Assessed and Transferred</b> .....	68
6. Education and Training .....	69
7. Awards and Recognitions .....	70
<b>8. Linkages and Collaborations in India and abroad including externally funded projects</b>	<b>71</b>
9. All India Coordinated Cotton Improvement Project .....	72
10. Krishi Vigyan Kendra .....	77
<b>11. General</b> .....	<b>79</b>
11.1 List of Publications .....	79
11.2 List of on-going projects .....	82
11.3 Consultancy, patents, commercialization of technology .....	91
11.4 Significant decisions of RAC, IRC and IMC Meetings .....	92
11.5 Workshops/Seminars/Summer Institutes /Farmers' Day Organised.....	96
11.6 Participation of Scientists in Seminars/Symposia/Conferences/ Workshops/ Trainings/ Meetings .....	98
11.7 Distinguished Visitors.....	102
11.8 Personnel.....	103
11.9 Other information.....	106
11.10 Weather.....	108
11.11 National Cotton Scenario .....	109