Report

On

COTTON COLLABORATIVE PROJECT

IN

WARDHA DISTRICT OF MAHARASHTRA

FOR

2015-16

Participating Organisations:

1. Agriculture Department of State Govt. of Maharashtra.
2. Confederation of Indian Textile Industry's Cotton Development and Research Association, Mumbai
3. Bayer Crop Science, Mumbai
4. Maharashtra Moffusil Mill Owners Association, Nagpur

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P.D.Patodia,
Chairman, Standing Committee on Cotton, CITI

Foreword

The year 2015-16 was the first year of CITI CDRA's cotton extension activities in Wardha district of Maharasthra. These activities were undertaken under the aegis of cotton collaborative project implemented jointly by the CITI CDRA, State Agriculture Department, Maharashtra State, Bayer Crop Science and the Maharashtra Moffusil Mill Owners Association Nagpur. The State Govt.'s approval to the project proposal was received late at the end of June 2015 by which time sowing of cotton in the district was almost over. Therefore by the time the required infrastructure to implement the project was put in place by early August 2015, the production technologies contemplated to be demonstrated as per the project proposal could not be done and the emphasis was laid on demonstration of pests and disease management practices.

The randomized data of production collected from 20% of 6384 project farmers from 40 villages of Selu, Deoli, Wardha and HInganghat tehsils revealed that the average yield was in the range of 652 to 848 kgs of lint per hectare. This was much above the district average of 430 kgs of lint and the State Average of 342 kgs.

Our project team during the extensive interaction with project farmers in the village level meetings and also on field inspection came across some of the practices which we think come in the way of improving yield and reduction of cost. On the field visits of our scouts and officers they found large gaps in the rows of the cotton fields which considerably reduced plant population, adversely affecting production and yield. Indiscriminate use of urea led to excessive growth of plants which attracted pests attack. Further instead of need based application of pesticides, farmers were found using pesticides like Monophotophos without understanding the purpose. We feel these areas need to be addressed by increasing awareness among cotton farmers.

Non-availability of labour and increase in the cost of picking of kapas are some of the issues which are engaging our attention. To deal with this issue, we have been propagating the use of battery operated automatic kapas plucker developed by The South India Mills Association's Cotton Development and Research Association (SIMA CDRA) Coimbatore . Extensive demonstration of use of these machines was organized by our field staff in the project areas and cotton farmers evinced keen interest in using these machines. During the

demonstrations it was noticed that mechanic harvesting of kapas resulted in saving of picking cost by upto 40%.

The CITI CDRA finalized institutional arrangements with CICR Nagpur for extending the services launched by that institution under its e-kapas network under which the project farmers received weekly updates as text messages in local language and voice mails guiding them to use latest technologies and providing solutions to instant problems like heavy rains or drought or pest attack, etc. All the 6384 project farmers were registered with CICR Nagpur for availing of these services.

I sincerely thank State Govt. of Maharashtra for the permission to implement the collaborative project in Wardha district. I also thank Shri Vikas Deshmukh , IAS, Commissioner for Agriculture , Maharashtra , other officers from Directorate of Agriculture, Maharashtra State, Shri Vijay Ghawate, Divisional Joint Director of Agriculture, Nagpur division , DSAO Wardha , Dy.Director of Agriculture, Wardha, Tehsil Agriculture officers at Selu, Deoli, Wardha and HInganghat , Agriculture supervisors working in these tehsils for their cooperation in implementing the project.

Thanks are due to Naishadh Parikh, Chairman CITI and Members of the Committee for their support and guidance for the implementation of the project. I also thank Shri Rajiv Patodia Chairman, MMMA, and Shri Prashant Mohota, MD of Gimatex P. Ltd Hinganghat for their continuous support while implementing the project.

I also sincerely thank Dr. K.R.Kranthi, Director, CICR Nagpur and other scientists from CICR Nagpur as also Dr.P.G. Patil, Director, CIRCOT and other scientists from CIRCOT Nagpur for their guidance and assistance while implementing the project.

I place on record our appreciation of the sincere and hard work of the CITI CDRA's team comprising of our advisor, Shri S.A.Ghorpade, our Project coordinator, Shri G.H.Wairale and the scouts while implementing the project.

My sincere thanks are due to the Bayer Crop Science team comprising of Shri Satish Ajne, Shri Gusvinder Singh, Dr. Asif Tanveer, Shri Sushil Desai and their field officer Shri Sharad Ramekar in Wardha district for their involvement in implementing the project.

I sincerely thank Shri Sureshbhai Kotak, Chairman, Indian Society for Cotton Improvement and Shri M.B. Lal, ex CMD, CCI for their guidance for pursuing the cause of cotton growers in Maharashtra.

Report for 2015-16

1. Introduction:

The year under review was the first year of the operation of the CITI CDRA's Cotton Collaborative Project in Wardha district of Maharashtra. While implementing the project , the State Agriculture Department of Maharashtra , Bayer Crop Science (BCS) and Maharashtra Moffussil Mill Owners Association (MMMA) were associated. In fact, the CITI CDRA, at the request of MMMA , decided to take up the project in Maharashtra to replicate the successful implementation of similar project in Rajasthan which led to rejunivation of cotton yield and production in Rajasthan , yield registering an increase from 415 kgs of lint per hectare (2007-08) to 609 kgs in 2015-16 and production reaching 17.0 lakh bales (2014-15) from 9.0 lakh bales (2007-08) . The project proposal submitted to the State Govt. was approved by the Director (Extension & Training) ,Commissionerate of Agriculture, Maharasthra State , Pune vide his letter dated 16.6.2015.

2. Launching of the project:

The project was launched on 13.7.2015 in the inaugural function held at the Vidarbha Industries Association, Nagpur. Shri Vijay Ghawte, Divl. Joint Director of Agriculture, Nagpur Division was the Chief Guest and Shri P.D.Patodia, Chairman, Standing Committee on Cotton , CITI presided over the function. Dr. C.D.Mayee , former Commissioner for Agriculture, Govt. of India , Dr. K.R.Kranthi , Director, CICR Nagpur, Shri Sureshbhai Kotak , Chairman, Indian Society for Cotton Improvement, Shri M.B. Lal Ex-CMD, Cotton Corporation of India , Shri Satish Ajane, Head Business Promotion Bayer Crop Science, Shri Rajiv Patodia, Chairman, MMMA and Shri Prashant Mohota MD, Gimatex P. Ltd participated in the meeting . Besides a large number of scientists from CICR Nagpur , representatives of Ginning & Pressing factories, cotton buyers , adityas and cotton farmers , members of press & media were present at the meeting.

Inauguration of Cotton Collaborative Project –Nagpur -13.7.2015Shri Prashant Mohota, Shri Rajiv Patodia, Shri Suresh Kotak, Shri P.D.Patodia, Shri Vijay Ghawate, Dr. C.D.Mayee , Dr. K.R.Kranthi, Shri Satish Ajane, Shri M.B.Lal

3. Execution of the project:

a. Project Area: The project was implemented in Wardha , Selu, Deoli and Hinghanghat tehsils of Wardha districts, 40 villages (10 from each tehsil) were selected. The tehsilwise details of villages , no. of farmers and area under cotton from these villages covered under the project were as under:

Sl. No.	Tehsil	Name of Villages	No. of Farmers	Total Area under cotton (in Acres)
1	Wardha	Padegaon, Jamni, Anji, Paaenur, Akoli, Selukate, Waigaon, Giroli, Sirasagaon, Bhivapur	1738	6900
2	Selu	Ghorad, Zadsi, Antargaon, Morchapur, Rehaki, Sindi,Padasgaon, Amgaon,	1454	7667

		Kandli, Digras		
3	Deoli	PADEGAON, Sonegaon, Muradgaon, Fatehpur, Anji, Bhidi, Gaur, Ratnapur, Vijaygopal, Inzala	1618	8166
4	Hinganghat	Burkoni,Chikmoh, Enoira, Wani, Kutki, Waghsaoli,Nandori, Belghat, Parda, Shegaon	1574	8589
	Total		6384	31322

b. Organisations involved in the execution of the project:

The following organisations were involved in the execution of the project :-

I. CONFEDERATION OF INDIAN TEXTILE INDUSTRY'S Cotton Development And Research Association (CITI-CDRA).
II. Agriculture Department of State of Maharashtra (AD).
III. Bayer Crop Science, Mumbai (BCS)
IV. The Maharashtra Moffussil Mill Owners Association (MMMA).

Shri Prashant Mohota, MD , Gimatex P. Ltd, Hinganghat addressing the interactive meeting with ginners , cotton traders/ commission agents, Agro Service Centres at HInganghat on 13.10.2015

A view of the participants in the interactive meeting held at Hinganghat on 13.10.2015.

c. Infrastructure for the project:

The CITI CDRA , BCS and MMMA financed the following infrastructure created in Wardha district for implementing the project at an estimated annual expenditure of Rs. 13.0 lakhs:-

i. Project Coordinator.
ii. Eight Scouts.
Each scout was entrusted with the responsibility of surveillance of the cotton crop from the villages entrusted to him besides supervision and execution of work of the project in five villages. Two scouts per tehsil were posted for this work**.** The expenses on mobility and phone were reimbursed to the scouts.

4. Training of Scouts:

Training to scouts covered the whole gamut of cotton cultivation right from soil health to clean harvesting. It included Integrated Nutrient management (INM) and Integrated Pest Management (IPM). Induction programme for scouts was implemented by Shri S.A.Ghorpade, Advisor, CITI CDRA, Shri Sushil Desai Associate General Manager, BCS and Shri G.H.Wairale, Project coordinator. Thereafter, project coordinator alongwith a resource person from Bayer Crop Science impareted training to scouts periodically. It included practical training. Besides, they were provided with technical literature on crop management and pest management. Officers of Rashtriya Chemicals & Fertilizers (RCF) imparted training to scouts about the drawl of soil samples for testing in their laboratory. For surveillance of cotton crop on continuous basis, the scouts were given on field training by technical persons from Bayer Crop Science.

5. Weather and its effect on Cotton Crop:

- Uneven spread of rainfall:

  Wardha district received monsoon rains in the second week of June 2015. Cotton sowing was completed by the end of the third week of the June. Thereafter for nearly five weeks there were no rains. High temperature endangered cotton crop which was on the verge of withering away. However, scattered rains again started at the end of July and from 3rd August to 5th August heavy rains were experienced in the district and cotton crop was saved. Good rains in August and September coupled with favourable climatic conditions helped cotton crop in the project areas to progress well.

Agriculture officer, Wardha tehsil addressing the interactive meeting held at Hinganghat on 13.10.2015

Question Answer session at the interactive meeting at HInganghat on 13.10.2015

Shri Sushil Desai Associate General Manager, Bayer Crop Science explaining the precautions to be taken while spraying pesticides in the farmers meeting held at Amgaon village.

A view of the participating farmers in the farmers meeting held at Amgaon village.

6. Deficient rainfall:

In the project areas, rainfall during 2015-16 was found deficient in Selu & Deoli tehsils as compared to the normal rainfall as would be evident from the following data:

Name of Tehsil	Average rainfall (mm)	Actual rainfall (mm)	Variation %
Wardha	900.00	995.67	110.63
Selu	972.00	651.00	66.00
Deoli	972.00	843.40	86.76
Hinganghat	947.00	1047.40	110.60

6.1 Month wise / Tehsil wise rainfall and its deviation from the normal rainfall was as under:

Sl. NO.	Tehsil	June	July	August	Sept.	Oct.	Average	Actual	%
1	Wardha	261.60	213.80	288.00	214.20	18.07	900	995.67	110.63
2	Deoli	248.80	107.70	325.80	141.10	20.00	972	843.40	86.76
3	Selu	172.00	170.00	197.00	110.00	2.00	972	651.00	66.00
4	Hinganghat	282.20	254.82	528.60	60.50	21.18	947	1047.40	110.60

Farmers meeting at village –Shegaon Kund -in Hinganghat tehsil held on 13.10.2015

Farmers participating in the meeting held in Gram Panchayat office at 13.10.2015

7. Varietal Profile of Cotton in Project areas of Wardha district:

During 2015-16 season, the following Bt hybrids were prominently cultivated in the project areas:-

Malika-155, Jai Vithhal, Ankur 3028, Ankur-Jai, BG-II, Krishi Sanjeevni, Pravardhan Denim, First Class BG-II, Ankur 3244, Ankur Aka 1274, Ankur 216, Kaveri ATM, Tulsi Surya, Tulsi 09, Jumbo Pravardhan, Mhayco Doctor Brand, Bhakti Nuziveedu, Bio- seed Gabbar Gold, Kaveri Jadoo, 9129 Deltapine and Bayer Superb.

8. Cotton Crop Condition:

Pre monsoon sowing operations commenced from 3rd week of May 2015. But, major cottons sowing took place in the 2nd and 3rd week of June 2015 after receipt of good rains. Thereafter, there was a gap of nearly 5 weeks in the rains which affected adversely cotton growth in some parts of the district. With the return of rains at end of July followed by plentiful rains in August and September crop condition improved considerably. Heavy rains in August led to water logging in Selu tehsil and also in some parts of other project tehsils.

9. Insect Pest situation:

Among sucking pests, infestation of Hassid, White flies, Mealy bug and Trips was observed in project area. It was however below ETL up to the end of August. Jassids, White flies and Mealy bugs continued to attack crop up to November.

10. Strategies adopted for implementing the project:

The following strategies were adopted while implementing the project:

a. Close coordination with Agriculture Department at district level:

The project coordinator established proper rapport and coordination with the Agriculture officers at tehsil and district level for involving them in the project activities like village level meetings of cotton farmers to create awareness among them about the plant protection technologies, associating them with farmers rallies and farmers training programmes. At regular intervals the project coordinator submitted detailed report to DSAO Wardha appraising him and Dy.Director Wardha about the progress of project. Agriculture Officer Wardha, participated in the meeting of stakeholders at HInghanghat in which representatives of local textile mills, cotton buyers, ginning and pressing factories, APMC and Agri Science Centres participated and assured all the assistance and help in successfully implementing the project. Agriculture supervisors in the project tehsils invariably participated in the village level farmers meetings organized to create awareness among farmers regarding latest production and plant protection technologies and to encourage their adoption for reduction of cost of cultivation and improve productivity.

b. Association with CICR'S e-kapas project:

Govt. of India has its Central Institute of Cotton Research (CICR) located at Nagpur. That institute launched e-kapas network , a crop advisory service for cotton farmers across the country from 2015-16 season. The main components of e-kapas project are as under:

i. To provide comprehensive technological as well as advisory bulletins for cotton farmers in cotton growing states in the country.
ii. Though service is free of cost , SMS and Voice messages are delivered to registered farmers .
iii. Interactive service for answering farmers queries and problem solving.
iv. Send weather forecast as well as mitigation measures for tackling extreme weather conditions like rains, flood, drought, pest attacks, etc.

v. Detailed presentation in form of return graphic and pictorial contents of kapaspedia.

Under this initiative, cotton farmers across ten cotton growing states of the country receive weekly updates as text messages in local language and voice messages guiding them to use the latest technologies-production and plant protection and providing solutions to instant problems like heavy rains or drought or pest attack etc. The CITI CDRA made institutional arrangement with CICR Nagpur and registered all its 6384 farmers for availing of these services to them . Besides, on request of CITI CDRA scientists from CICR , Nagpur participated in training programmes for farmers and guided them in solving problems related to cotton crop.

c. Coordination among stakeholders in the project:

Apart from the coordination with the state agriculture department has brought out above, CITI CDRA ensured association of other partners in the project with various activities of the project undertaken in the project areas. Shri Prashant Mohota, MD Gimatex P. Ltd HInganghat organized an interactive meeting of the CITI CDRA , Bayer Crop Science, Agriculture Officers Hinganghat tehsil, representatives of ginners , adtiyas , commission agents, APMC members and Agriculture Service Centre from Hinganghat tehsil for appraising them of the purpose of collaborative project being implemented in Wardha district with a view to improve production , quality and yield of cotton on the lines of CITI CDRA project successfully implemented in Lower Rajasthan. Representatives of all these organisations participated in the meeting in large number and assured all the cooperation for implementing the project.

Bayer Crop Science with its elaborate set up in Wardha district extended support to farmers in project areas by supplying quality seeds of Bt hybrid like Surpass First-class which gives higher lint percentage , giving them guidance throughout the season till harvesting of kapas , participating in training of farmers regarding c**otton crop protection , safe use of pesticides, etc.**

*Dr. Sharad Nimbalkar , Ex-Vice Chancellor, PDKV distributing soil health cards to project farmers at Kisan gathering organized by CIRCOT, Nagpur on 21st March 2016***.**

View of project farmers participating in the Kisan gathering organized by CIRCOT Nagpur on 21st March 2016

11. Scientists / Agriculture Officers associated with the implementation of the project:

While executing the project and imparting training to scouts and project farmers the CITI CDRA received assistance and guidance from the following scientists/officers of agriculture department during the year under review:

Sl. NO.	Name of Scientist/ Officer	Designation	Organisation
1	Dr. K.R.Kranthi	Director	CICR Nagpur
2	Dr. S.K.Shukla	Scientist	CIRCOT Nagpur
3	Dr. S.M.Wasnik	Scientist	CICR Nagpur
4	Dr. M.S.Kairan	Former Director	CICR Nagpur
5	Dr. V.Mageswaran	Scientist	CIRCOT Mumbai
6	Dr. S.V.Ghadge	Sr. Scientist	CIRCOT Mumbai
7	Dr. Sharad NImbalkar	Former Vice Chancellor	PDKV Akola
8	Shri Sushil Desai	Assoc. General Manager	Bayer Crop Science
9	Shri Sharad Ramekar	Field Officer	Bayer Crop Science
10	Shri D.A.Bharati	SAO Wardha	Agriculture Department, Wardha
11	Shri G.R.Kapse	Dy.Director (Agri)	Agriculture Department, Wardha
12	Tehsil Agriculture Officers of Wardha, Selu, Deoli and Hinganghat	-	-

Shri Bharati SAO Wardha addressing the farmers meeting. Dr Kairon Ex Director CICR Nagpur, Senior scientist, CIRCOT and Shri G.H.Wairale, Project coordinator are seen on the dais.

12. Need to change prevailing practices of cotton cultivation.

The State Govt.'s approval to the cotton collaborative project in Wardha district was received late in June 2015 and by that time cotton sowing in the district was over. Therefore, cotton production technologies as listed in CITI CDRA's project proposal could not be demonstrated to the project farmers. Nonetheless, during interaction with Project farmers through field visits and village meetings it was noticed that at present cotton cultivation practices like sowing of cotton by pata system, prevalence of large gaps in the rows of cotton plants resulting in considerable reduction in plant population, indiscriminate use of Urea leading to excessive vegetative growth and the general belief among cotton farmers that such excessive growth was the sign of good crop , etc. needed to be corrected. More often than not borders were not kept clean and they were found full of parthenium weeds which happens to be the host plants for mealey bugs.

a. Cotton Planting system in vogue and its disadvantages

Pata sowing system in vogue in the project areas creates problems of waterlogging in the event of excessive rains and also wilting of cotton plants . Besides this system does not help in moisture conservation and under moisture stress conditions cotton crop suffers. If the present system is suitably modified by preparation of ridges and furrows at the time of last hoeing it would help in moisture conservation and run of excess rain water.

b. Gap filling to ensure adequate plant population

During the farmers meetings the need to fill up the gaps for ensuring adequate plant population by resorting to preparation nursery of seeding was stressed for maximizing yield among the project farmers.

c. Disadvantages of excessive plant growth:

Contrary to the general belief among cotton farmers that excessive growth was the sign of a good crop, the farmers were made aware of the fact that such excessive growth of cotton plants invariably attracted pest attacks and to avoid that farmers should arrest terminal

growth by nipping terminal shoots at 10-12th node and also by using growth regulators like Chamatkar after 80-85 days of sowing.

d. Avoiding unnecessary use of Pesticides:

During the field visits cotton farmers were found using Monophotofos without knowing the purpose for which they were spraying the pesticides. It was surprising that the farmers had resorted to spray of this, because others have done it. Such use of pesticides led to increasing the cost of cultivation. The importance of need based application of pesticides was impressed upon the project farmers.

e. Farmers not aware of Health Hazards of pesticides spraying:

It was noticed that while spraying cotton fields with pesticides /insecticides the cotton farmers were not fully aware of the health hazards if proper care to protect themselves from side effects of such pesticides was not taken. The farmers were made aware of the precautions and care to be taken while spraying pesticides in order to avoid ill effects on the health of the farmers.

f. Impact of higher PH in water in effectiveness of pesticides.

It is a well-known fact that if pesticide is mixed with water having higher PH than prescribed norm of 5-7% PH in water its effectiveness gets reduced, but it was noticed that neither the cotton farmers nor the Agri Service Centres which sell pesticides were aware about the quality of water to be used for mixing pesticides before spraying in order to get full impact of such pesticide spraying.

Demonstration of the functioning of cotton plucker developed by SIM CDRA in the presence of Dr. Shukla of CIRCOT, Dr. Kairon, Ex Director, CICR, Nagpur, Shri Bharati, SAO Wardha and Shri Wairale, Project Coordinator are seen in the picture.

g. Mixing of Kapas of different hybrids/varieties.

During the field visits and farmers meetings, it was noticed that many farmers were found to have sown 2-3 Bt hybrids in their fields mostly on the advice of the Agri Service Centres.However while harvesting cotton the farmers mixed kapas of all these hybrids together before selling the same. When they were informed about the difference in quality parameters of each Bt hybrids and how such mixing led to reduction in price, they expressed helplessness to keep variety wise kapas separately mainly due to the problem of labour for picking of kapas, particularly the reluctance of labour to keep hybrid wise kapas separately. To overcome this issue, demonstration of battery operated mechanical kapas handpicker developed by SIMA CDRA; Coimbatore was organized in the project villages for the benefit of project farmers. The demonstration showed that use of kapas hand pickers resulted in saving of kapas picking cost by 35 to 40%.

h. Clean Harvest of Kapas:

Another issue relating to kapas harvesting pertained to clean harvest of kapas, avoiding admixture of trash, leaves, human hair, plastic threads from plastic bags used for collection of harvested kapas. A lot of awareness was required to impress upon the cotton growers the various ways to preserve quality of harvested kapas. Maintenance of cleanliness of kapas while transporting the harvested kapas to storage point and from there to market yard were the other two important stages where they were required to take precautions for avoiding damage to quality of kapas by way of mixing of dust, residues of cotton plant, etc.

i. Use of cotton plant residues:

Cotton plant is a versatile plant and none of its parts go waste. After harvesting of kapas cotton plants are uprooted and used as fuel . Instead of that it is possible to add value by using cotton plant residues for farm composting, production of briquettes and pallets for power generation. There are NGOS working to educate farmers on this aspect and the project farmers are being brought in touch with such NGOS with a view to help the farmers in reducing the cost of cultivation by adding value to the use of cotton plant residues.

CITI CDRA stall at the Technology and Machinery Demonstration Mela 2016 organised by CIRCOT at Nagpur.

13. Seed Cotton yield in the project areas:

After analyzing seed cotton yield data of 20% of the 6384 project farmers selected on random basis from four tehsils , the following picture emerged regarding the range and the average seed cotton yield in respect of project areas.

Tehsil	Village	Range(q/acre)	Average yield per acre
Selu	Aygaon	6.20-15.08	10.64
	Palasgaon	5.20-10.80	8.00
	Kandli	5.40-10.71	8.05
	Digras	5.71-10.95	8.33
	Sindi	5.60-12.48	9.04
	Rehaki	8.40-13.00	10.70
	Ghorad	9.00-12.28	16.64
	Morchapur	9.00-12.25	10.625
	Zadsi	9.00-11.66	10.33
	Antagaon	9.00-12.75	10.875
	Average	7.251-12.195	9.723
Deoli	Padegaon	7.00-11.00	9.00
	Sonegaon	6.00-10.00	8.00
	Muradgaon	7.00-12.00	9.50
	Fatehpur	5.00-10.00	7.50
	Anji	6.00-13.00	9.50
	Bhindi	5.00-10.00	7.50
	Gaur	5.00-10.00	7.50
	Ratnapur	5.00-14.00	9.50
	Vijaygopal	3.00-7.25	5.125
	Inzala	3.00-7.00	5.00
	Average	5.20-10.426	7.825
Wardha	Padegaon	7.00-11.00	9.00-
	Jamini	4.00-8.00	6.00
	Anji	6.00-15.00	10.50
	Punur	8.00-16.70	12.35
	Akoli	3.00-5.33	4.165
	Selukate	9.00-14.00	11.50
	Waigaon	10.00-12.00	11.25
	Giroli	12.00-15.00	13.50
	Sirasagaon	12.00-17.00	14.50
	Bhivpur	7.00-11.00	9.00
	Average	7.80-12.553	10.177

Hinghanghat	Burkoni	4.50-13.00	8.75
	Chikmoh	4.00-13.50	8.75
	Enoira	4.00-12.00	8.00
	Wani	4.00-15.00	9.50
	Kutki	4.00-12.00	8.00
	Waghsaoli	7.00-12.00	9.50
	Nandori	7.00-10.00	8.50
	Belghat	6.00-25.00	15.50
	Parda	7.0-12.00	9.50
	Shegaon	7.00-10.00	8.50
	Average	5.45-13.45	9.45

13.1 Comparison of Lint cotton yield in project areas vis-a-vis district and state average yield:

Tehsil-Project Area	Kapas yield q/ha	Yield in kgs of lint /ha	District average yield* kgs/ha	State Average yield** kgs/ha	Variation	
					District	State
Selu	24.31	810	430	342	+88.37	+136.84
Deoli	19.56	652	430	342	+61.53	+90.64
Wardha	25.44	848	430	342	+97.20	+147.95
Hinganghat	23.63	788	430	342	+83.26	+130.41

*As per district crop Assessment by DSAO office.

**As per Cotton Advisory Board, Govt. of India estimates.

14. Test Results of Fibre qualities of various Bt hybrids:

Two samples of Bayer Fist Class BG II kapas were got tested at CIRCOT, Nagpur with a view to ascertain the ginning percentage. In respect of sample e-563951 the ginning percentage was found in the range of 42.15% and in respect of sample e-563950 it was 42.85%.

Representative samples of some of Bt Cotton Hybrids grown in project areas were got tested from Central Institute for Research on Cotton Technology (CIRCOT), Nagpur and the test results were as under:

Sl. No.	Institute Lab No.	Variety/Code	Centre	UHML MM	UI (%)	MIC µg/inch	Tenacity 3.2 mm (g/tex)	EL %	Ginning %
1	C-563950	Malika 155	Hinganghat	33.2	84	**4.2**	32.9	5.9	35.6
2	C-563951	Jai Vithal	Hinganghat	30.6	83	**3.6**	30.3	6.1	34.9
3	C-563952	3028	Hinganghat	28.1	82	**3.8**	30.4	5.9	37.4
4	C-563953	Brahma 3028	Hinganghat	28.0	82	**3.4**	29.4	5.8	36.2
5	C-563954	Ankur 3028	Hinganghat	30.3	83	**3.5**	28.1	5.6	33.1
6	C-563955	Jai Bg Ii	Hinganghat	27.5	81	**3.1**	27.3	5.5	39.9
7	C-563956	Rishi Sanjeevini	Shegaon khurd	27.7	81	**3.2**	28.5	5.3	37.1
8	C-563957	Pra Denim	Parda (Hingan)	27.0	81	**2.6**	30.8	5.9	39.1
9	C-563958	First Class BG II	Balghat	28.8	82	**3.4**	28.9	5.8	40.1
10	C-563959	Ankur 344	Ghorad	30.1	83	**3.8**	28.4	5.8	34.6
11	C-563960	Ankur Aka 1274	Zadsi	29.4	82	**4.1**	27.2	5.8	37.8
12	C-563961	Ankur 216	Rahki	30.1	83	**4.0**	25.8	5.5	37.4
13	C-563962	Bayer First class	Rahki	25.7	80	**3.7**	27.4	5.9	42.1
14	C-563963	Kaveri ATM	Morchapur	27.6	81	**3.1**	30.4	5.9	40.1
15	C-563964	Tulsi(surya)	Wadgaon	28.2	82	**4.0**	28.1	5.6	37.8
16	C-563965	Tulsi 09	Wadgaon	29.3	82	**3.7**	26.4	6.0	37.3
17	C-563966	J.Pravardhan	Ratnapur	32.5	84	**4.0**	32.36	5.7	36.8
18	C-563967	Dr. Brand	Bhidi	30.4	83	**3.6**	29.0	5.6	36.6
19	C-563968	Bhakti Nuziveedu	Bhidi	31.4	83	**4.2**	30.4	5.8	36.3
20	C-563969	Malika Nuziveedu	Ratanapur	32.8	84	**3.8**	33.3	5.7	36.2
21	C-563970	912 Delta	Shirasgaon	30.3	83	**3.2**	34.6	6.1	36.8
22	C-563971	Kaveri Jadu	Satode	33.0	84	**5.0**	33.4	5.5	34.1
23	C-563972	B.Gabbar Gold	Anji	33.3	84	**4.7**	34.2	5.8	33.7

15. Technology Awareness:

In the village level meetings of project farmers from 40 villages conscious efforts were made to create technological awareness regarding the following aspects having bearing on yield enhancement, effective pest disease management, retaining intrinsic fibre qualities of cotton, cost reduction, etc:-

I. Crop rotation and deep ploughing during summer.
II. Timely saving of high yielding varieties/Hybrids.
III. Use of refugee crop on borders in case of Bt hybrids
IV. Fertilizer application on soil test basis including micro-nutrients and bio-fertilisers.
V. Timely gap filling for optimum plant population
VI. Clean cotton cultivation including borders to minimize pest infestation.
VII. Application of hormone as spray to check flower and ball dropping.
VIII. DE topping in case of excessive vegetative growth in order to protect plants against loading and diverting nutrients for productive purpose instead of vegetative growth.
IX. Proper water management of draining of excessive rain water/ use of drip irrigation system.
X. Regular pest surveillance, identification of pests and their damage symptoms.
XI. Use of low cost IPM technologies such as use of light traps, pheromone traps, yellow sticky traps, bird perchers, Neem leaf extract, Neem seed Kernel extract and Neem Oil for management of pests along with conservation of eco-friendly insects.
XII. Use of new molecules for effectively managing pest in case of insecticidal use, that too on ETL basis.
XIII. Safe use of pesticides.
XIV. Clean harvest of cotton- use of mechanically operated kapas handpicker to reduce cost of kapas harvesting.
