

SUCCESS STORIES

of

Special Project on Cotton

Targeting technologies to agro-ecological zones-large scale demonstrations of best practices to enhance cotton productivity



Y.G. Prasad, A.S. Tayade, M. V. Venugopalan, K. Sankarnarayanan,
BS Patil, A.L. Waghmare, Rabindra Prasad



**DIRECTORATE OF COTTON DEVELOPMENT
NAGPUR, MAHARASHTRA**

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Foreword

Cotton is an important field crop commercially cultivated by over 6 million farmers in 3 zones spread across 10 major States of the country. India is the second largest producer and consumer of cotton and provides >60% raw material to the global textile industry. Cotton is cultivated in 12.9 million ha with a production of 337 lakh bales in 2022-23. However, productivity of cotton is below 500 kg lint/ha predominantly due to rain fed cultivation (67% area) and increasing incidence of extreme weather events. India cultivates all the four species of cultivated cotton but 95% of the area is covered by Bt hybrids of upland cotton, *Gossypium hirsutum*. Long duration productive Bt hybrids have spread to all agro-ecologies irrespective of the growing environments. In the central and southern zone, cotton is cultivated in shallow to medium soils in about 3.8 million ha area where the productivity is below 350 kg lint/ha.

In order to improve the cotton productivity in these tracts, Ministry of Agriculture & Farmers Welfare, (MoA&FW), Govt. of India launched a special project on cotton 'Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity' under National Food Security Mission (NFSM) with an outlay of Rs.41.87 crores in PPP mode. MoA&FW alongwith Ministry of Textiles, Textile Industry Associations, Seed associations, ICAR-CICR, ICAR-ATARIs, Krishi Vigyan Kendras (KVKs) and State Departments of Agriculture came together for implementation of special project of cotton during 2023-24 *kharif* season involving >10000 farmers in 61 districts in 8 States.

The Special Project focused on scaling up of three cotton technologies (1) high density planting system in shallow soils (2) closer planting in medium soils and (3) production technology for extra-long staple (ELS) cotton in niche areas. Technology assistance to farmers was provided to registered farmers employing a mobile app and direct benefit transfer (DBT) payments to farmers through a web portal. All field sites were geo-referenced and tagged with the genotype and yield performance data.

The special project on cotton has certainly demonstrated the productivity potential of technologies targeted to agro-ecology as evidenced by the success stories of farmers documented in this publication. I complement all the project partners and stakeholders for their holistic approach towards bridging the yield gaps in cotton and profitability for cotton farmers.

(Shubha Thakur)

Preface

Low plant population, erratic rainfall and terminal drought coupled with pest damage due to pink bollworm are major factors limiting cotton productivity in the country. Adoption of good agronomic practices in cotton tailored to genotypes and different cotton growing environments has the potential to boost cotton productivity. With this background, the Ministry of Agriculture & Farmers Welfare, Government of India approved a special project on cotton entitled 'Targeting technologies to agro-ecological zones - large scale demonstrations of best practices to enhance cotton productivity' under National Food Security Mission (NFSM) for implementation during 2023-24. The project is being implemented through ICAR-Central Institute for Cotton Research (CICR), Nagpur in PPP mode in the identified clusters through value chain approach by collaboration with farmers, ICAR, states, textile industry associations, seed associations and state department of agriculture to increase productivity of upland cotton and Extra Long Staple (ELS) cotton. Major focus is on participatory demonstrations of three scalable technologies i.e. (1) 'High density Planting System' (HDPS) (2) Closer spacing in cotton in medium soils & ELS cotton in niche areas. The project is spread across eight states in 61 districts covering more than 9000 ha involving >10000 farmers.

'High density Planting System' (HDPS) technology in cotton implemented in 3033 ha area involving 2904 farmers in 38 districts across six states resulted in higher yields in rainfed farming situations combining compact BG II hybrids with HDPS at 90 cm x 15 cm in shallow soils with canopy management. In medium deep soils, compact genotypes planted at closer spacing of 90 cm x 30 cm along with canopy management in 3641 ha area involving 4231 farmers in 48 districts across 8 states resulted in higher productivity. Demonstrations were conducted on improved production technology of ELS cotton varieties/ hybrid in 9 districts of Madhya Pradesh, Rajasthan and Tamil Nadu covering 2389 ha area involving 3283 farmers. Special focus on ELS cotton production in target area in value chain mode can generate renewed interest among farmers, boost production, availability and profitability for all stake holders. Large scale demonstrations targeting compact genotypes in suitable soils with canopy management enhanced the productivity significantly and ensured profitability for farmers. It is our hope that the success stories documented in this publication will serve as motivation for stakeholders, extension functionaries and rainfed farmers for adoption and dissemination of scalable technologies to boost cotton productivity at the farm level and improve the overall cotton economy in the country



(Y. G. Prasad)
Director, ICAR-CICR

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Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity

Background

Cotton provides an excellent example of the interaction between technology and policy, and its effects on the cultivation of a crop. Concomitant with the steep increase in adoption of Bt cotton hybrids, favourable Government policies and vigorous promotion of technological adoption in certain regions, the average cotton productivity has increased from 302 kg/ha in 2003 to 552 kg/ha in 2014. In the last decade, yield of cotton has stagnated and hovering around 500 kg lint/ha, this is despite the fact that almost >96% of the farmers have adopted the state of art BG II hybrid. With respect to cleanliness, contamination in Indian cotton is a major concern for export as per the International Textile Manufacturers Federation (TMF). Picking of cotton is labour intensive. In India, entire cotton is handpicked by human labour. Picking cost share ranges between 30-40 % of cost of cultivation.

Cotton is a climate sensitive crop. Technologies and practices that can render cotton production climate resilient assume greater importance in view of the increased climate variability and occurrence of extreme weather events especially rainfall. Practice of land shaping for moisture conservation and drainage of excess moisture is gaining momentum in cotton production system. Reduced availability and application of manures coupled with mono-cropping has led to decline in soil organic matter. Incorporation of available crop residue/waste generated in the cropping system in soil can enhance soil organic matter content, promote plant health and enhance resilience of the cotton production system. Machine shredding of crop residue and accelerated *in situ* decomposition through use of microbial culture for needs to be demonstrated for wider awareness and application.

Mismatch in demand and supply of extra-long staple (ELS) cotton leads to its import which costs the exchequer Rs 2000 crore in foreign exchange to the country.

The problem faced by cotton production systems in recent years are

1. Stagnation in productivity

2. Shortage of ELS cotton necessitating import
3. High contamination
4. High picking cost and eroding profitability of cotton farming
5. Adoption of Bt hybrids in regions with short length of growing season
6. Declining organic matter content in the soil
7. Increasing rainfall variability and frequency of extreme weather events, pest and disease outbreaks

Technological options available with ICAR-CICR and other relevant research organisations including private industries are needed to be demonstrated on a large scale to overcome productivity bottlenecks in the identified agro-ecological domains. Hence, an Extension project is planned in a cluster based and value chain approach to boost cotton productivity in Public Private Partnership (PPP) mode with the participation of ICAR-CICR, Nagpur; CITI & SIMA; Seed Industry Associations (NSAI and FSII); Extension partners (Cotton Development and Research Associations of CITI and SIMA; Agricultural Technology Application Research Institutes & their Krishi Vigyan Kendras); State Departments of Agriculture-ATMA), Textile partners and Cotton Corporation of India (CCI).

The pilot project proposal comprises of three sub-projects. The following scalable technologies have been identified for technology targeting in identified agro-ecological zones:

1. High density planting system in low productivity areas with shallow soils with canopy, nutrient, soil health management (Current productivity: ~350 kg lint/ha; Target: 750 kg lint/ha)
2. Closer Spacing planting system in medium productivity areas with medium deep soils under rainfed cotton ecosystem with canopy, nutrient and soil health management (Current productivity 600 kg lint/ha; Target: 1000 kg lint/ha)
3. Production technology for ELS cotton in niche areas under rainfed/irrigated farming situation (current productivity of ELS variety: ~350 kg lint/ha; Target: >500 kg lint/ha; ELS hybrid: Target – 750 kg lint/ha)

Objectives

1. Demonstration of tailored agronomy for target yield with focus on high-density planting system and closer planting system in rainfed cotton production system
2. Demonstration of tailored agronomy for higher productivity in ELS cotton in niche areas

Ministry of Textiles and Ministry of Agriculture sponsored, an Extension project in a cluster based and value chain approach to boost cotton productivity in Public Private Partnership (PPP) mode with the participation of ICAR-CICR, Nagpur; CITI & SIMA; Seed Industry Associations (NSAI and FSII); Extension partners (Cotton Development and Research Associations of CITI and SIMA); Agricultural Technology Application Research Institutes & their Krishi Vigyan Kendras; State Departments of Agriculture-ATMA, Textile partners and Cotton Corporation of India (CCI).

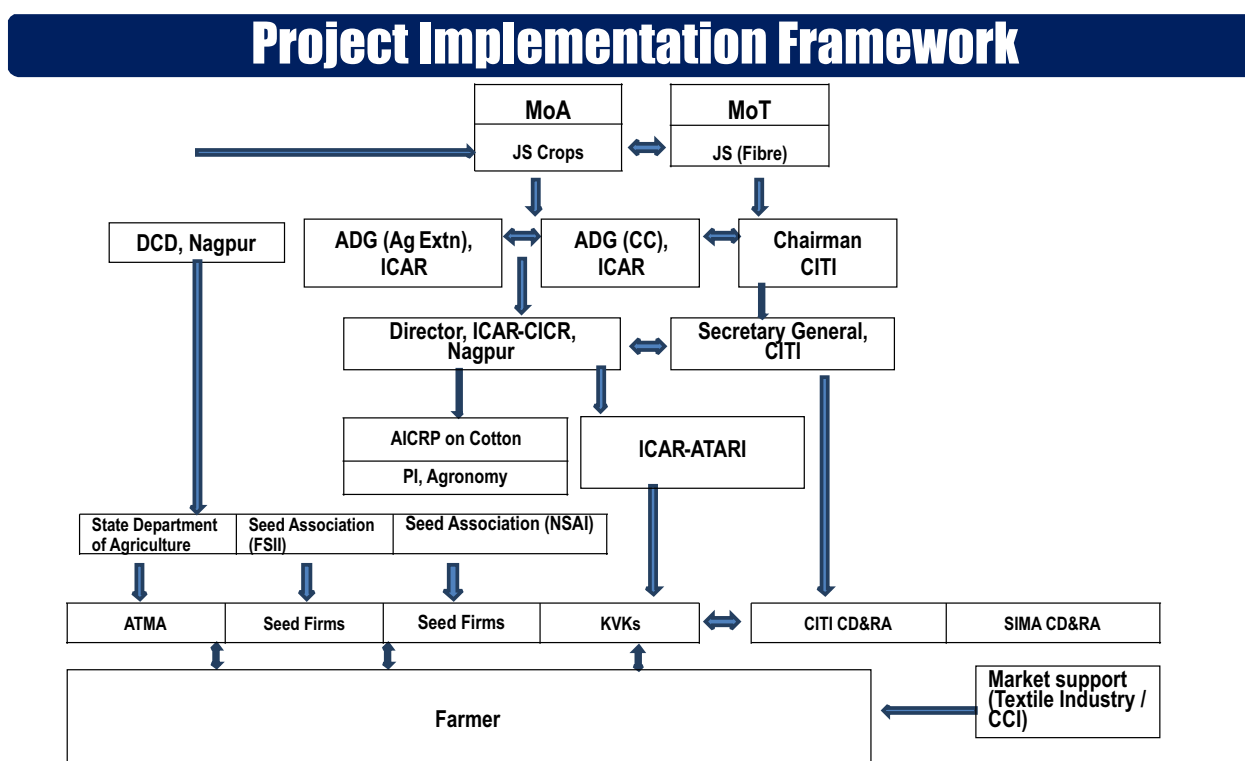


Fig 1: Project Implementation Framework of Special Project on cotton

The Pilot Project comprises of three technologies namely given in Table 1 i.e. High-density planting system, Closer Spacing planting system and Production technology for ELS cotton. The objective of Special project is enhancement in productivity of rainfed cotton on marginal soils from 350 kg lint/ha to 750 kg lint/ha, under HDPS in drought prone area to 600 kg lint/ha; and under closer spacing from

600 to 1000 kg lint/ha, and extra-long staple cotton to 750 kg lint/ha through improved package of practices.

Table 1: Scalable technologies for targeted agro-ecological zones under special project on cotton

S.No.	Scalable technology	Current (Kg lint/ha)	Target (kg lint/ha)
1	High Density Planting System (HDPS) in low productivity areas under rainfed cotton ecosystem with canopy management	350	750
2	Closer spacing 90 x 30 cm in medium deep soils with canopy management	600	1000
3	Production technology for ELS cotton in niche areas under irrigated/rainfed farming situations	500	750

Technology targeting and scaling-up was done in a total area of 9064.34 ha, covering 8 states with 61 districts and more than 170 clusters in the first year (Table 2) with productivity target matching the world average productivity initially. Technology assistance of 12000 Rs/ha for Closer spacing, 16000 Rs/ha for ELS and 16000 Rs/ha for HDPS is empowered to the farmers under small and marginal category.

Table 2: Details of districts, number of farmers and area under special project in cotton during 2023-24

States	Number of District	No. of Farmers	Demonstrations Area (ha)
Rajasthan	4	912	440.2
Gujarat	6	331	466.66
Madhya Pradesh	4	3354	2323.24
Maharashtra	16	2356	2413.76
Andhra Pradesh	6	811	980.27
Karnataka	3	146	170.90
Tamil Nadu	8	701	507.51
Telangana	14	1807	1761.80
Grand Total	61	10418	9064.34

This special project is being implemented by below mentioned implementing agencies:

Nodal agency: CICR, Nagpur

The ICAR-Central Institute for Cotton Research (CICR) is an apex body of cotton research in India under the aegis of Indian Council of Agricultural Research (ICAR), New Delhi. It was established in 1976 with the headquarters at Nagpur (Maharashtra) famously known as 'Orange city' and two Regional Stations at Coimbatore (Tamil Nadu) and Sirsa (Haryana) cater to the research requirements of the stakeholders in Southern and Northern regions respectively. Over the years, ICAR-CICR has emerged as a premier research and development organization conducting basic, strategic and applied research on various problems confronting cotton production in the country.

Scalable Technology Interventions

HDPS technology in Special Project on Cotton

Many cotton producing countries like Brazil, China, Australia, Spain, Uzbekistan, Argentina and Greece adopted High Density Planting System in cotton as a best practice to achieve higher productivity and amenability for mechanical picking. In recent years, early maturing, compact/ semi-compact Bt varieties were released by ICAR-CICR and ICAR-All India Coordinated Research Project on Cotton (AICRP on Cotton). Canopy and nutrient management essential for HDPS has been standardized. Compact Bt Hybrids (BG II) suitable for HDPS and mechanical harvest have been developed by the private seed industry. Ideally a spacing of 90x15 cm is recommended for HDPS. Also, there are some BG II hybrids that are semi-compact and can perform well at closer spacing of 90x30 cm as against 90x60 cm or 120x45 cm adopted by the farmers. Hybrids for both the categories are now commercially available for different agro-ecological zones. HDPS/Closer spacing technology can serve as an alternative to enhance productivity in targeted rainfed agro-ecologies especially in areas registering productivity below national/state average productivity and where scope exists for double cropping. A spin off of HDPS is escape from the productivity loss inflicted by the dreaded late season and widely prevalent insect pest i.e., cotton pink bollworm. During 2023-24 cotton crop season HDPS interventions were demonstrated in 38 districts, 1896 clusters, and 1094 villages of Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Tamil Nadu and Telangana (**Table 3**). A total of 2904 farmers have sown HDPS cotton on 3033.04 ha.

Objectives

Demonstration of tailored agronomy for target yield with focus on high-density planting system
/closer spacing system in rainfed cotton production system

Table 3: Details of farmers and villages adopted for demonstrating HDPS cotton during 2023-24

State	No. of Districts	No. of Clusters	No. of villages	No. of farmers	Area (Ha)
Andhra Pradesh	3	7	14	46	49.97
Gujarat	4	4	48	84	141.52
Karnataka	3	5	22	41	51.2
Maharashtra	10	44	289	1164	1266.33
Tamil Nadu	4	15	38	125	82.14
Telangana	14	111	683	1444	1441.88
Total	38	186	1094	2904	3033.04

High Density Planting System (HDPS) in Cotton (Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Telangana, Tamil Nadu)

ICAR-CICR, Nagpur has standardized 'High density Planting System' (HDPS) for cotton that has potential to realize high yields in rainfed farming systems. Under rainfed conditions for contemporary compact BG II hybrids, HDPS at 90 cm x 15 cm is better suited to shallow black soils and red soils (Table 4). Canopy and nutrient management essential for HDPS.

Table 4: Technological components for HDPS Cotton

Practice	Spacing (cm)	Plant population/acre	Seed rate/Acre (450 g packets)	Soil
HDPS	90 x 15	29,629	6	Shallow soils, Red soils



Cotton seedlings under HDPS



HDPS field after earthing up at 55 days



Planting of cotton using pneumatic planter



(a)



(b)



(c)

Manual sowing under HDPS using a) plastic pipe, b) nylon rope c) metallic chain

Canopy management

Canopy management is a set of mechanical or chemical practices employed over the cotton plant canopy aimed at changing the original growth pattern and architecture, thus making the plants more efficient in utilizing the growth resources-light, water, nutrients, ground space and ultimately making the crop more productive per unit area and time. Under HDPS, these practices are needed for curtailing excessive vegetative growth and retaining first formed bolls.

The practices include

- Reducing plant height and optimizing height to node ratio either by spray of growth regulators or by mechanical/manual de- topping (nipping or the removal of terminal portion prevent apical dominance and further vegetative growth)
- Removal of unproductive vegetative branches (monopodia) and other plant parts to promote light penetration, improve aeration
- Nipping of sympodial branches after the desired number of bolls are set

Under HDPS these practices are needed for curtailing excessive vegetative growth and retaining the first formed bolls. Canopy management can be done manually using a secateurs/pruning shears or hand pruner or a knife blade. Vegetative branches (monopods) are removed at 40-45 days stage. Crop height is terminated by de-topping the crop at around 90-100 cm height.



Manual removal of monopodial branch

Canopy management can be done spraying chemical growth retardants. Mepiquat chloride and chlormequat chloride are the common growth retardants used in HDPS cotton. Two to three sprays are given depending on the growth of the crop, soil conditions and impending weather pattern.



Spray of mepiquat chloride for growth regulation

Canopy management is done similar to that in HDPS. PGR (mepiquat chloride) sprays are applied at 45, 65 and need based spray at 85-90 days. Canopy management can also be done manually by removing monopodial branches at 40-45days after sowing and de-topping at about 90 days after sowing.



Canopy management in cotton

Closer Spacing Planting System in Cotton(Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Rajasthan, Maharashtra, Telangana, Tamil Nadu)

Semi-compact genotypes are recommended for planting in medium density (closer spacing) along with canopy management by PGR sprays (mepiquat chloride) or de-topping at 90 days. Spacing for closer spacing is 90 x 30 cm (3 x 1 feet) to give a plant population of 14400 per acre in medium deep soils (Table 5).

Table 5: Technological components for closer spacing demonstrations

Practice	Spacing (cm)	Plant population/acre	Seed rate/Acre (450 g packets)	Soil
Closer spacing	90 x 30	14,814	4	Medium deep to deep soils

Closer spacing can be taken up in medium deep, productive soils using semi-compact gentoypes in relatively assured/higher rainfall areas. During 2023-24 cotton crop season closer spacing in cotton was demonstrated in 44 districts, 166 clusters, and 1017 villages of Rajasthan, Gujarat, Madhya Pradesh,

Maharashtra, Telangana, Andhra Pradesh and Karnataka (Table 6). A total of 4111 farmers have sown HDPS cotton on 3553.83 ha.

Table 6: Details of farmers and villages adopted for demonstrating closer spacing interventions in cotton during 2023-24

State	No. of Districts	No. of Clusters	No. of villages	No. of farmers	Area (Ha)
Rajasthan	3	10	120	600	240.0
Gujarat	6	21	77	247	325.14
Madhya Pradesh	2	10	87	839	471.35
Maharashtra	16	64	428	1192	1147.42
Telangana	10	38	210	363	319.92
Andhra Pradesh	4	14	52	765	930.3
Karnataka	3	9	43	105	119.70
Total	44	166	1017	4111	3553.83

Extra Long Staple (ELS) production technologies for niche areas

There is a mismatch in demand and supply of different staple category of cottons particularly in ELS cotton (fibre length of >32.5 mm & above as per ICAR-CIRCOT, Mumbai). The country is importing ELS cotton to the extent of 5-10 lakh bales annually from Egypt, Sudan, U.S.A etc. Currently ELS cotton is grown in about 2 lakh hectares in India mostly adopting inter-specific (HxB) Bt hybrids. The demand for the textile products made out of ELS cotton is growing exponentially and the potential for value addition of the products made out of these cotton varieties is very high. The demand for ELS cotton in India is about 20 lakh bales against the availability of only about 4 lakh bales. The shortage of ELS cotton from domestic production has been highlighted by the textile industry for quite some time. ICAR-CICR has released 3 ELS cotton varieties in 2021/22 and *hirusutm* varieties like Subhiksha and Suraksha which are of superior fibre quality. Breeder seed production can be taken on demand and fibre parameters are within the acceptable (ELS) quality to industry. Special focus on ELS cotton production in target areas in value chain mode can generate renewed interest among farmers, boost production, availability and profitability for all stakeholders. Improved production technology for ELS cotton needs to be demonstrated in targeted niche areas for enhancing productivity and bridging the gap in demand and supply. The Improved ELS cotton Agronomy developed by ICAR-CICR, regional station Coimbatore is given in Table 7.

Table 7: Technological components for ELS cotton varieties/ hybrid

Practice	Spacing (cm)	Plant population/acre	Seed rate/Acre (450 g packets)	Soil
ELS	90 x 45	9,880	3	Niche areas

Objectives

Demonstration of improved production technology of ELS cotton varieties/ hybrids in target irrigated areas

Demonstration of improved production technology for ELS cotton varieties/ hybrid in irrigated areas of Madhya Pradesh and Tamil Nadu was planned under special project on cotton for enhancing productivity and bridging the gap in demand and supply. During 2023-24 cotton crop season ELS interventions were demonstrated in 9 districts, 28 clusters, and 272 villages of Madhya Pradesh, Rajasthan and Tamil Nadu (Table 8). A total of 3283 farmers have sown ELS cotton on 2389.77ha.

Table 8: Details of farmers, clusters and villages adopted for demonstrating ELS interventions in cotton during 2023-24

State	No. of Districts	No. of Clusters	No. of villages	No. of farmers	Area (Ha)
Madhya Pradesh	3	12	195	2515	1851.90
Rajasthan	1	1	20	312	200.2
Tamil Nadu	5	15	57	456	337.67
Total	9	28	272	3283	2389.77

Achievements made under special project

Under the special project on cotton during 2023-24 a total of 208 trainings were organized wherein 13656 farmers were benefitted with HDPS, Closer spacing and ELS cotton technologies. To popularize these technologies 208 field days, 30 cotton workshop and 17 Kisan Mela were organized (Table 9, 10, 11, 12). The project was monitored by Joint Secretary Textile, director, CICR, Nagpur and Various Nodal scientists from ICAR-CICR, Nagpur, SAUs and ATARI scientists and KVK scientists across the eight states.



JS Textile Prajakta Verma visited HDPS Demonstrations



Cotton seed distribution to beneficiary farmer by JS Textile Prajakta Verma



Project Monitoring by Nodal Scientists of ICAR-CICR, Coimbatore

Table 9: Details of farmers training conducted under the special project on cotton

Year	Farmers trainings conducted			
2023-24	Nos	Beneficiaries		
		Male	Female	Total
	257	14121	3169	17290





Training on canopy management in HDPS cotton by CICR, Nagpur



Diagnostic Field Visits of Nodal Scientists, CICR, Nagpur and Dada Lad an Innovative Farmers



Awareness campaign conducted by CICR Nagpur Scientist



HDPS Cotton in boll bursting stage



Cotton workshop under special project on cotton



PBW management awareness at Roadside Tea stall



Training on HDPS in Cotton

Table 10: Details of field days organized under the special project on cotton

Year	Cotton Field Day organized			
	Number	Beneficiaries		
		Male	Female	Total
	183	13711	3525	17236



Extension activities conducted under Special Project



Training to cotton farmers on Canopy management



Cotton Field Day



Field visit and Field Day



Cotton Field Day KVK, Darsi



Hon.District collector Sau. Manishaji Khatri visited Special Project on cotton-Dada Lad Technology at KVK Farm



Field day programme on HDPS cotton at Pesaladinni village



Cotton Field day



Project Monitoring by Officers of DCD-DA&FW, Nagpur (M.H.)



Special Project on Cotton in Wardha District of Maharashtra State



Special Project on Cotton in Yavatmal District of Maharashtra State



Special Project on Cotton in Nagpur District of Maharashtra State



Special Project on Cotton in Jalna District of Maharashtra State



Special Project on Cotton in Nandurbar District of Maharashtra State



Special Project on Cotton in Ch. Samabhajinagar District of Maharashtra State



Special Project on Cotton in Beed District of Maharashtra State

Table 11: Details of farmer's workshop conducted under the special project on cotton

Year	Farmers Workshops conducted			
2023-24	Number	Beneficiaries		
		Male	Female	Total
	32	3642	885	4527



Workshop organised at Anwaricamp village



Cotton workshop organised under special project







Table 12: Details of Kisan Mela conducted, farmer's advisories and extension literature provided under the special project on cotton

Year	Kisan Mela organized				No. advisories issued (Social media/Voice/ P & E media)	No. of Leaflets/brochures/folder s developed by KVKs (softcopy pdf)
2023-24	Numb er	Beneficiaries			752	133
		Male	Female	Total		
	21	6402	3592	9994		



Release of brochure on HDPS Cotton by Director Extension



Kisan Mela under Special Project



Field Day under Special project



Dr.Y.G.Prasad, Director, ICAR-CICR Nagpur addressing Cotton Farmers during Kisan Mela



Dr. Arjun Tayade, Chief Nodal Officer and Head CICR, Nagpur interacting with farmers during Kisan Mela at KVK Beed



Dr. Y.G. Prasad, Director CICR, Nagpur addressing farmers during Kisan Mela at KVK Parbhani



Kisan Mela on HDPS cotton at Koppar village



Kisan Mela Lasadia, Bhilwara

Table 13: Statewise performance of HDPS demonstrations

State	Average yield/acre in Demonstrated plot	Average yield /acre in Neighboring conventional plots	Increase over Farmers Practices(%)
Gujarat	10.92	7.19	52.02
Maharashtra	10.75	7.14	50.55
Andhra Pradesh	10.32	6.89	49.82
Telangana	10.2	7.57	35.10
Karnataka	7.50	5.50	36.36

The data presented in Table 13 revealed that due to special project implementation in eight states, there was significant seedcotton yield improvement of 35.10 to 52.02 per over the farmers practice. Since the crop in Gujarat state is grown under irrigated condition the overall yield increase due technological is more as compared to Telangana and Karnataka.

**Cotton crop in Vegetative Phase under HDPS****Full bloom cotton crop under HDPS****Full bloom cotton crop under HDPS**

HDPS cotton/closer spacing -Success Stories

Success story -1: An innovative High Density Planting System in Cotton increases Productivity and profitability of farmers in Rajkot, Gujarat

Vinodbhai Virjibhai Vadodriya a cotton grower from Gondal tehsil of district Rajkot, Gujarat planted cotton for the first time using high density planting system (HDPS). While adopting the HDPS cotton he chose a compact Rasi NEO cotton hybrid and used higher seed rate of 5 packet per acre. He planted cotton manually by following row to row spacing of 90 cm and plant to plant spacing of 15 cm and maintained optimum plant population of 29629 per acre. Before the special project on cotton was implemented, he used plant cotton at wider plant spacing of 135 cm x 45 cm that resulted in lower plant population of 6584 per acre under medium to light soils. Amongst the major bottlenecks limiting yield are low plant population, erratic rainfall and terminal drought coupled with pink bollworm attack effected cotton growth and development which manifested in low cotton yield and farm income. By and large good agronomic practices like HDPS and four lifesaving irrigations changed the overall cotton scenario and he could harvest a bumper crop of 15 quintals/acre. The new HDPS techniques of cotton planting developed by ICAR-Central Institute for Cotton Research, Nagpur augmented the cotton yield by 30-35% over conventional method of cotton planting. He earned good income from his cotton produce because of earliness in boll bursting and synchronous picking that resulted in early harvest thereby escaping pink bollworm attack. In case of HDPS farming they get more yield than conventional farming. He encourages the farmers of surrounding villages also for adopting HDPS farming and thus HDPS in cotton paves a new way of cotton cultivation in state of Gujarat.





An innovative High Density Planting System in Cotton increases Productivity and profitability of farmers in Rajkot, Gujarat

Success story -2: Short duration hybrid with closer spacing enhance Cotton- Coriander system productivity

Cotton farmer Lathiya Jaysukhbhai Devrajbhai from Lathi village of Amreli district Gujarat adopted closer spacing in cotton on medium deep soil. In Gujarat state, majority farmers on medium deep soil grow cotton under wider spacing (150-180 cm x 45-60 cm). Wider crop geometry in could accommodate only 3704 to 5926 cotton plant per acre which results in low cotton productivity. Under special project on cotton, closer spacing technological intervention in Amreli district of Gujarat was demonstrated using NCS-8899 (SIRI) cotton hybrid wherein cotton was sown manually at crop geometry of 90 cm x 30 cm. As the cotton crop was grown under closer spacing slightly higher seed rate of cotton i.e. 4 packet per acre was used. Closer spacing was found ideal in terms of maintaining a better crop stand of 14,815 cotton plant per acre. Better natural resource utilization under closer spacing in cotton boosted cotton yield by 35-40% over the conventional farmers practice. The cotton crop matures early and in three picking 10 quintal of seed cotton was harvested from one acre of land. Due to early crop maturity and harvest of cotton crop the pink bollworm attack was almost negligible and he could harvest good quality cotton. Subsequently, he could take a second crop of coriander that will add to his income from same piece of land. A farmers training programme/field day was organized on his field which was attended by more than 170 farmers.



Success story -3: HDPS: A Sustainable way of cotton production under rainfed condition of Vidarbha, Maharashtra

Cotton farmer Mr. L.K. Kalpande, from Kondali village, Katol taluka of Nagpur district adopted High-Density Cotton planting following the technical guidance by CICR, Nagpur. He planted Bt-variety seeds of Suraj under the National food security mission (NFSM) Frontline Demonstration Project (FLD). He used six packet cotton seed/acre, maintaining a plant population of 29,000 per acre with a spacing of 90 cm x15 cm. High Density Planting System (HDPS) proved highly suitable for shallow soil with high calcium carbonate content. Plant growth was remarkably good. This year (2023), with the training and support from Special Project run by ICAR-CICR, Nagpur & CITI-CDRA, the farmer have taken up HDPS planting in his field with Bt hybrid Rashi-608 BGII. The crop management practices includes

1. Bt-Cotton hybrid (Rashi-608 BGII) was dibbled under HDPS with a spacing of 90 cm x15 cm.
2. Manual hand weeding 2 times, 2 intercultural operations and weedicide 2 times at 2 stages – Pre-emergence during sowing and post emergence at squaring (40 days after sowing)
3. Balanced fertilizers of urea- 1 bag, Single Super phosphate-1.5 bag, Murate of potash- 15 kg and Magnesium Sulphate -10 kg was applied as basal dose. First split applications of urea- (1/2) half bag, Single Super phosphate-1.5 bag, Murate of potash- 15 kg and Zinc Sulphate -5 kg was done 45 days after sowing. Second split application of urea- (1/2) half bag and Borax -2 kg /acre at squaring and flowering critical growth stages (65 days after sowing) was done. For the correction of nutrient deficiencies a foliar spray of micronutrient mixture 50 g per 20 litres of water at 80 days after sowing was given to the crop. Subsequently, at 100 days after sowing of cotton 100 g of 19-19-19 water soluble fertilizer in 20 litres of water was sprayed. This has resulted higher boll weight and overall crop growth.
4. Under HDPS, canopy management was followed by using chemical sprays of growth regulators. At 15 days interval, after 45 days of cotton planting, he has done 3 sprays of Naphthalic acidic acid @ 8-10 ml in 20 litre. This has arrested square drop and flower shedding and maintained good boll numbers per plant. Moreover, at squaring and flowering stages, two sprays of Mepiquat chloride (20 -24 ml in 20 litre of water) was provided. Sprays of Mepiquat chloride could reduce the problem of excess vegetative growth of cotton under HDPS. It also reduced plant height, improved sympodial branches growth & boll retention.

5. Integrated pest management strategies were employed by following a window strategy for addressing sucking pests and bollworms. IPM practices includes neem oil, sticky traps, pheromone traps, trichogramma cards and foliar spray of chemicals-2 times (sucking pests) and 1 time (boll worm).
6. Took preventive measures against cotton diseases such as root rot and boll rot.

As a result of HDPS interventions, at 150 days after cotton planting, more than 20 bolls per plant, indicates the potentiality of bountiful crop yield. This could primarily attributed to good agronomic management practices followed under HDPS. In rainfed eco-region of Vidrabha, HDPS in cotton proved to be a relief to distress cotton farmers. Many farmers have also expressed their interest to adopt the HDPS technique next year.

Cotton yield under HDPS, has turned in to a profitable farming, since partnering with ICAR-CICR, Nagpur. Previously, the farmer could achieve a yield of 6 to 7 quintals per acre, which has increased to 15 quintals per acre due the adoption HDPS under Special project on cotton. This significant improvement can be attributed to high density planting system (HDPS), the use of superior seeds and agronomic practices recommended by ICAR-CICR, resulting in increased yield and a substantial reduction in expenses by 25%.



Success story -4: Success Story of Gundamallasrinivasulu of Telangana

GundamallaSrinivasulu is a lead Cotton farmer from Kastala(Village) of Chandur Mandal, in Nalgonda district of Telangana. In 2023 June pre monsoon dry season sown cotton seeds under HDPS technology and used varieties are SIRI and ARMITHA of Nuziveedu Seed Company and he gained more yield when compared to traditional cotton crop. Before the start of the special project on cotton, Srinivasulu was using the traditional methods of cotton farming and was getting an average produce, he realized about old practices and shifted to HDPS planting in cotton. HDPS cotton was totally new and none of the farmers in and around his village had not used HDPS technology in cotton, for the first he was followed this HDPS technology. KVK KAMPASAGAR, NALGONDA (PJ TSAU) conducted field days and training programmes about this technology and seed firms like Rasi



and Nuziveedu participated for those training programmes and field days. Information from KVK-Kampasagar that helps the farmer and farming community to adopt the HDPS technology. He purchased seed packets from Nuziveedu seeds pvt ltd. He demonstrated HDPS on one acre by following crop spacing of 90 cm x 18 cm and used 5 packets per acre(1 packet 475 grams). In this technology more plant population was maintained as compared to traditional (normal) cotton method. He sprayed plant growth regulator (Mepiquat chloride) locally called as Chamatkar at 45DAS and 60 DAS to arrest the excess height of the crop. The effect of growth regulator was more remarkable and it increases the no of sympodial branches in cotton. Canopy management in cotton helped him to gain more cotton yields. Rest of the management practices i.e. water management, nutrient management and pest management were same as followed in traditional (normal) cotton method. For nutrient management he used Urea, DAP, 20-20-0 fertilizers. For correction nutrient deficiencies he resorted on foliar sprays of 19-19-19 and Magnesium spray ($MgSO_4$). While practicing IPM he also used pheromone traps for monitoring of pink boll worm (PBW). Through HDPS technology Srinivasulu gained higher cotton yields with good quality kapas. As compared to normal practice of cotton growing, he could sustained a cotton yield of 9

q/acre under HDPS cotton which is substantially more (4.5 quintals/acre). Better profitability was observed under HDPS and he could earned higher economic returns of Rs 27,845/acre. He is satisfied with this technology and for the next season he will grow entire my cotton fields with this HDPS TECHNOLOGY

Table 14: Comparative performance HDPS cotton

PARTICULARS	NORMAL COTTON	HDPS TECHNOLOGY
Seed rate	2-3 packets	5-6 packets
Spacing	90 cm x 60 cm	90 cm x 18 cm
Chamathkar Spray	Not sprayed	Sprayed at 45 and 60 DAS of cotton
Plant population per acre	7,407	29629
Total expenditure	18,500	22,200
Market price (per q)	7010	7010
Yield per acre	4.5 Quintals	9 Quintals
Gross income (Rs)	31,545	63,090
Net income (Rs)	13,045	40,890



Gundamalla Srinivasulu cotton farmer

Success story- 5: Closer Planting System and Pink Bollworm Management strategies saves the cotton crop in Lasadiya, Sawaipur, Bhilwara, Rajasthan

Shrimati Dali Devi w/o BheruGurjar is a resident of Lasadiya Village, Sawaipur Cluster, Bhilwara District, Rajasthan. She associated with cotton farming cotton. Her land was rainfed and well irrigated condition and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm in the last 2 to 3 years.



**Shrimati Dali Devi
w/o BheruGurjar**

She cultivated cotton over 1 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 50 to 60% of crop loss. The cost of cultivation increased and the margin of profit was very low. In 2023, she cultivated cotton crop over the same area with technical guidance and motivation from CITICDRA Project coordinator for Rajasthan. She got the opportunity to participate in the Pilot Project Dissemination of pink bollworm management strategies implemented under the CITI - CDRA. Under the project, CITI-CDRA Project Coordinator, Project Officer and Cotton Extension Assistant regularly provided the guidance during the entire season, training and participatory field visits for identification of insects and their stages as well as observations recording on pink bollworm in pheromone traps and field infestations. She followed the pink bollworm strategies such as using closer Planting System (90 cm x 30cm), installation of pheromone traps, spraying of major and micronutrients, micoriza, cow urine and sour buttermilk at flower initiation and detopping in cotton. Due to these technological interventions the cost of cotton cultivation decreased significantly over last year's cotton crop. These could proportionately increase the overall profit margin with a seed cotton yield of 37.75 q/ha. Due to implementation of the special project, the farmer could harvest more cotton yield to the extent of 30% to 40% than last year's yield.

Success story- 6:Special project enhances seedcotton yield of farmers Pahuna, Chittorgarh, Rajasthan

Shrimati Indra Devi w/o Amba Lal Jat is a resident of Karjiya Village, Pahuna Cluster, Chittorgarh District, Rajasthan. She associated with farming cotton for a while. Her land was rainfed, well irrigated and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm in the last 2 to 3 years. She cultivated cotton over 1 acres area and incurred crop losses of 50 to 60% due to the heavy infestation of pink bollworm.



**Shrimati Indra Devi
w/o Amba Lal Jat**

To manage the pest and diseases in cotton, she relied more chemical sprays which lead to increased cost of cultivation thus resulted in lower profitability in cotton. In 2023, she cultivated cotton crop over the same area with technical guidance and motivation from CITICDRA Project coordinator for Rajasthan. She got the opportunity to participate in the Pilot Project Dissemination of pink bollworm management strategies implemented under the CITI - CDRA. Under the project, CITI-CDRA Project Coordinator, Project Officer and Cotton Extension Assistant regularly provided the guidance during the entire crop season, training and participatory field visits for identification of insects were carried out. For monitoring of pink bollworm in cotton, pheromone traps were installed and field infestations were noted periodically. She followed the pink bollworm management strategies such using closer planting system (90 cm x 30 cm), installation of pheromone traps, spraying of major and micronutrients, micoriza, cow urine and sour buttermilk at flower initiation, detopping in cotton. Improved cotton technologies could reduce the cost of cultivation than previous year of project implementation and resulted in more profitability with seedcotton yield of 40 q/ha. The extent of yield improvement due to special project implementation to the tune of 30 to 40% over last year cotton harvest.

Success story- 7: Closer Planting System in cotton sustained cotton production in the, Bhilwara Rajasthan

Shrimati Manju Devi w/o Sohan Lal Jat is a resident of Karjiya Village, Pahuna Cluster, Chittorgarh District, Rajasthan. She associated with farming cotton for a while. Her land was rainfed and well irrigated condition and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm in the last 2 to 3 years. She cultivated cotton over 1 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 50 to 60% of crop loss.



Manju DeviJat

The cost of cultivation increased and the margin of profit was very low. In 2023, she cultivated cotton crop over the same area with technical guidance and motivation from CITICDRA Project coordinator for Rajasthan. She got the opportunity to participate in the Pilot Project Dissemination of pink bollworm management strategies implemented under the CITI - CDRA. Under the project, CITI-CDRA Project Coordinator, Project Officer and Cotton Extension Assistant regularly provided the guidance during the entire season, training and participatory field visits for identification of insects and their stages as well as observations recording on pink bollworm in pheromone traps and field infestations. She followed the pink bollworm strategies such as using closer Planting System (90 cm x 30 cm), installation of pheromone traps, spraying of N.P.K., micronutrients micoriza, cow urine and sour buttermilk at flower initiation, detopping in cotton. Adoption of improved methods of cotton cultivation has reduced the cost of cultivation and improved profit margin in cotton farming than last year cotton season. Under the project area she harvested seed cotton yield of 37.5 q/h which was 30 to 40 % more than last year cotton yield.

Success story- 8: HDPS-A Sustainable way of cotton production under rainfed eco-region of Raichur, Karnataka

Cotton farmer Mr. Ramappa P, from Pesaladinni village, Raichur Taluka and District adopted High-Density Cotton planting following the technical guidance by CICR, Nagpur under National food security mission (NFSM) and ICAR-KVK, Raichur. He used six packet cotton seed/acre, maintaining a plant population of 29,000 per acre with a spacing of 90 cm x15 cm. High Density Planting System (HDPS) proved highly suitable for shallow soils. Plant growth was remarkably good. This year (2023), as the training and support from Special Project run by ICAR-CICR, Nagpur, CITI-CDRA and ICAR-KVK, Raichur, the farmer have taken up HDPS planting in his field with Bt hybrid KCH 9292 BGII. The crop management practices included

1. Bt-Cotton hybrid (KCH 9292 BGII) was dibbled under HDPS with a spacing of 90 cm x15 cm.
2. Under HDPS, canopy management was followed by using chemical sprays of growth regulators. At squaring and flowering stages, one spray of Mepiquat chloride (20 -24 ml in 20 litre of water) was provided. Sprays of Mepiquat chloride could reduce the problem of excess vegetative growth of cotton under HDPS. It also reduced plant height, improved sympodial branches growth and boll retention.
3. Took preventive measures against cotton diseases such as root rot and boll rot.
4. Medium to low pest incidence was observed
5. For leaf reddening, he had taken a spray of magnesium sulphate (0.5 %)

As a result of HDPS interventions, at 120 days after cotton planting, more than 18 bolls per plant, indicates the potentiality of bountiful crop yield. This could primarily be attributed to good agronomic management practices followed under HDPS. In rainfed eco-region of Karnataka, HDPS in cotton proved to be a relief to distressed cotton farmers. Many farmers have also expressed their interest to adopt the HDPS technique next year.

Cotton yield under HDPS has turned into a profitable farming, since partnering with ICAR-CICR, Nagpur. The farmer achieved a yield of 7 to 8 quintals per acre due to the adoption HDPS under Special project on cotton. This significant improvement can be attributed to high density planting system (HDPS), the use of superior seeds and agronomic practices recommended by ICAR-CICR, resulting in increased yield and a substantial reduction in expenses by approximately 25 percent.



Field Day conducted at Pesaladinni Village, Raichur, Karnataka.



Geo tagging of Farmer Field at Pesaladinni Village, Raichur, Karnataka.

Success story-9: An Innovative Closer Spacing in Cotton Increases Productivity and Profitability of Farmers in Kopper, Raichur, Karnataka

Cotton farmer Shri. Shantareddy Kopper village, Devadurga taluka, Raichur district of Karnataka adopted closer spacing in cotton on medium deep soils. In Karnataka state, majority of the farmers on medium deep soil grow cotton under wider spacing (150-180 cm x 45-60 cm). Wider crop geometry could accommodate only 3704 to 5926 cotton plant per acre which results in low cotton productivity. Under special project on cotton, closer spacing technological intervention in Raichur district of Karnataka was demonstrated using RCH 929 cotton hybrid where in cotton was sown manually at crop geometry of 90 cm x 30 cm. As the cotton crop was grown under closer spacing slightly higher seed rate of cotton *i.e.* 4 packets per acre was used. Closer spacing was found ideal in terms of maintaining a better crop stand of 14,815 cotton plant per acre. Better natural resource utilization under closer spacing in cotton boosted cotton yield by 35-40 percent over the conventional farmers practice. The cotton crop matures early and in three picking 11.5 quintal of seed cotton was harvested from one acre of land. Due to early crop maturity and harvest of cotton crop, the pink bollworm attack was almost negligible and he could harvest good quality cotton. A kisan mela was organized on his field which was attended by more than 150 farmers.



- Crop was sown at 90 x 30 cm spacing
- Each plant bore sympodial/ fruiting branch 60-70
- Number of green bolls per plant were 50 – 60 bolls
- Number of open bolls per plant were 60-65
- Boll weight of 5.5 to 6 g
- Harvested 11.5 quintals of seed cotton per acre



Success story -10: HDPS-A novel technology for boosting cotton production and income of farmer under light shallow soils of Yadgir, Karnataka

Saheb Gouda, a cotton growing farmer from Kyatnal village of Yadgir district has adopted High Density Planting System (HDPS) in cotton on light soil, following the technical advice by Central Institute for Cotton Research, Nagpur. He selected cotton hybrid KCH 9292 BG II from Kaveri seeds Co. Ltd. for adoption of this HDPS technology and used higher seed rate of 5 packets per acre. He implemented this technology in 3 acres of farming land and was maintained by himself. Prior to switching the new HDPS technology, he was practicing the traditional method of cotton cultivation with a spacing of 90×60 cm that led to lower plant population, later on he shifted to new technology of HDPS by reducing plant spacing *i.e.*, of 90×15 cm, which increased the plant population upto 29629, In turn resulted in more yield when compared to traditional method of cotton cultivation.

Two to three lifesaving irrigations along with inter cultivation operations encouraged the plant growth and development. Spraying with the growth regulator chamatkar stopped the monopodial growth and enhanced the number of sympodial braches and remaining fertilizer dose followed was same as traditional method. Maximum number of sympodial braches and an average of 25 bolls per plant were observed. Adopting good agronomic practices along with HDPS technology enhanced the farmer income with cotton yield of 11-12 quintals/acre. In case of traditional method of cotton cultivation, the farmer could get yield of 7 to 9 quintals per acre in irrigated conditions. The early boll bursting prevented the pink bollworm attack thereby resulted in early harvest and synchronous picking reduced the labour crisis and labour cost. As its having short duration, he can take up next crop on the same land if there is good irrigation facility. Adoption HDPS under Special project on cotton has increased the cotton yield (28%) and enhanced the profit of farmer.

The significant notable improvements were recorded with the adoption of high density planting system along with the use of superior seeds and agronomic practices recommended by Central Institute for Cotton Research, Nagpur. This technology led to increased yield and a substantial reduction in cost of cultivation over traditional method. Farmer achieved good cotton yield from this technology. He pushes other farmers in the nearby villages to switch to HDPS technology. Many farmers have impressed by the significant results and showed their interest towards implementation of this HDPS technology in upcoming year.

Field day at Kyatnal, scientists from CICR Nagpur visited the field



Success story- 11: Augmentation of productivity in cotton through Closer Spacing Technology

Nagappa B Hadapad, a cotton growing farmer from Rastapur village of Yadgir district, adopted a closer spacing technology in cotton developed by Central Institute for Cotton Research, Nagapur. Usually majority of the farmer follow conventional method of cotton cultivation spacing the plants at 90×60 cm which led to smaller population. The closer spacing technology maximized the plant population by altering the plant spacing by 90×30 cm which in turn resulted in higher yield as compared to conventional method of cotton cultivation.

In the closer spacing technology, farmer used four packets of cotton seeds per acre as it is little higher compared to traditional method. He used Rasi max hybrid cotton seeds from Rasi seeds Pvt. Ltd. He implemented this technology in 2 acres of his cultivated irrigated land and maintained by himself. Early maturity of the crop escaped the attack by pink boll worm and meanwhile farmer can go for next crop on the same piece of land which could enhances his income. It also reduced the cost of cultivation and labour crisis.

Two irrigations along with mepiquat chloride (5%) spray supported the better plant growth and remaining fertilizer dose followed was same as traditional method. Closer spacing technology was accommodated cotton plant population of 14,988 per acre. In turn closer spacing helped in the judicious utilization of nutrient resource by plants and provides better aeration to the crop. Maximum number of sympodial braches and an average of 25 bolls per plant were observed. In closer spacing method of cotton cultivation farmer resulted with 12-14 quintal per acre where as in traditional method 7-8 quintal of seed cotton was harvested from one acre of land. The notable differences in the yield (32%) achieved with closer spacing technology along with good agronomic practices. The farmer end up with good yield and satisfied with this technology. Many farmers from nearby villages accepted and showed interest towards close spacing technology.



Field day at Rastapur, Vice chancellor of UASR and other officers visited the farmer field

Success Story-12: Closer spacing in cotton enhances profitability of cotton grower in Amravati district of Maharashtra

Shri. Mukund Kolamkar is a resident of Umari Village, Daryapur Taluka, Amravati Dist. He is associated with farming for last 18 years, owned 5 acres land under rainfed and irrigated condition and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 2 to 3 years. During 2019-20, he cultivated cotton over 2.5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 50 to 60% of crop loss. The cost of cultivation increased and the margin of profit was very low. During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity.



Shri Mukund T Kolamkar

Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits and Field Day Program. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot farmer harvested 50.85 quintal of seedcotton yield from one hectare whereas in control plot he could get only 36.25 q/ha. With the implementation of strategies included in CS the seedcotton yield was increased by 37.99% than farmers practice, moreover it also reduces 2 sprays of insecticide for the management of pest in cotton. Thus the cotton profitability in term of BC ratio values (2.81:1) substantially higher with project area.

Success Story-13: Closer Spacing Pays Better Returns to Cotton Farmers in Daryapur, Amravati district of Maharashtra state

Shri. Arvind S Pote is a resident of Adula BK Village, Daryapur Taluka, Amravati Dist. He is associated with farming for last 22 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low. During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological



Shri. Arvind S Pote

zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits and Kisan Mela.

He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot farmer harvested 31.75 quintal of seedcotton yield from one hectare whereas in control plot he could get only 23.60 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 34.53 % more yield, reduction of 03 sprays and BC ratio 2.81:1.

Success Story-14: Closer spacing increases cotton productivity of Daryapur, farmers from Amravati, Maharashtra

Shri. Shekhar R Chavne is a resident of Gholchindi Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 20 years, owned 3 acres land under rainfed and Irrigation Condition and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 3 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



Shri Shekhar R Chavne

During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot farmer harvested 28.5 quintal of seedcotton yield from one hectare whereas in control plot he could get only 20.75q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 37.34 % more yield, reduction of 02sprays and BC ratio 2.81:1.

Success Story-15: Closer spacing paves a new way for boosting profitability of rainfed cotton in Amravati Maharashtra

Shri. Sunil U Katre is a resident of Gavandgoan Bk Village, Anjangaon Surji Taluka, Amravati Dist. He associated with farming for last 20 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 3 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss.



Shri Sunil U Katre

The cost of cultivation increased and the margin of profit was very low. During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot farmer harvest 29.40 quintal of seed cotton yield from one hectare whereas in control plot he could get only 21.75 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 35.17 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-16: Sustainable way of cotton production with closer spacing and canopy management interventions in Amravati, Maharashtra

Shri. Dnyaneshwar Patharkar is a resident of Yeoda Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 20 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



During 2023-24, he cultivated cotton crop over same area with **Shri Dnyaneshwar Patharkar** technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices and one Field Day. In demonstration plot farmer harvested 31.5 quintal of seed cotton yield from one hectare whereas in control plot he could get only 21.75 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 44.82 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-17: Closer spacing in rainfed cotton enhances cotton productivity in Amravati district of Maharashtra

Shri. Gangadhar Mankar is a resident of Rajkhed Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 30 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



Shri Gangadhar Mankar

During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot the farmer harvested 35.75 quintal of seed cotton yield from one hectare whereas in control plot he could get only 23.40 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 52.77 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-18: Closer Spacing and canopy management pay back to cotton growers of Amravati, Maharashtra

Shri. Dinkar Subhash Patond is a resident of Higni Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 40 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



Shri Dinkar Subhash Patond

During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot the farmer harvested 31 quintal of seed cotton yield from one hectare whereas in control plot he could get only 21.00 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 47.62 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-19: Better Gain from rainfed cotton farm with technological support from special project on cotton.

Shri. Surendra Ramdas Ingale is a resident of Sanglood Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 20 years, owned 5 acres land under rainfed and witnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 5 acres area and incurred crop losses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



Shri Surendra R Ingale

During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones- large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc. In demonstration plot the farmer harvested quintal of seed cotton 33.25 yield from one hectare whereas in control plot he could get only 22.75 q/ha. With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 46.15 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-20: Better pink bollworm management and closer spacing cotton enhances the cotton yield of rainfed cotton farmers

Shri. Pandurang vittalraoKordeis a resident of Ramagad Village, Daryapur Taluka, Amravati Dist. He associated with farming for last 20 years, owned 5 acres land under rainfed andwitnessed reduction in yield of Bt cotton due to infestation of pink bollworm since last 3 to 4 years. During 2017-21, he cultivated cotton over 2.68 acres area and incurred croplosses due to the heavy infestation of pink bollworm which caused 60 to 70% of crop loss. The cost of cultivation increased and the margin of profit was very low.



Shri Pandurang Vittalrao Korde

During 2023-24, he cultivated cotton crop over same area with technical guidance and motivation from Scientists of KVK, Durgapur, Amravati. He got the opportunity to participate in the cotton pilot project: Targeting technologies to agro-ecological zones-large scale demonstrations of best practices to enhance cotton productivity. Under the project, KVK staff regularly provided the guidance during entire season, training and participatory field visits. He followed the strategies such as installation of pheromone traps, spraying of Chamtkar (Mepiquat Chloride), ETL based spraying of pesticides, IPM practices etc.In demonstration plot the farmer harvested quintal of seedcotton35.70 yield from one hectare whereas in control plot he could get only 24.25q/ha.With the implementation of strategies included in closer spacing as compared to non-CS farmers, he gained approximate 47.21 % more yield, reduction of 02 sprays and BC ratio 2.81:1.

Success Story-21: Manual canopy management: An innovative way of sustainable cotton production in Marathwada region of Maharashtra

Shri.Dinesh Dnyaneshwar Rajput is a B.A. educated, progressive youth farmer and graduated in the field of Arts. He native of Pimparkheda (Khurd), Tehsil Kannad, Dist- Chhatrapati Sambhajnagar, State - Maharashtra- 431010. He has always interest in doing something new in traditional agriculture. He has taken up farming from his parents for modernized and organic farming. He is doing his farming with no use of chemical (VishMuktSheti). For that he has taken training on the same and adopted various new technologies, practices on his field. He received technical guidance about cotton farming and canopy management from



Shri Dinesh D Rajput

ICAR-CICR, Nagpur and Krishi Vigyan Kendra, Chhatrapati Sambhajnagar-1, Maharashtra. He has started Cotton Production with Manual Canopy management i.e. Dada Lad Technology with no use of chemicals under the guidance of Hon.Shri.Dadaji Lad. Along with this he is also getting regular advice from KVK, Chhatrapati Sambhajnagar for better cotton production. Now a days he trying to disseminate this technology among the farmers and trying to motivate them to adopt this technology.

Challenges:

High cost of cultivation, Low yield, High use of chemicals in cotton crop, improper maturity of crop, high requirement of fertilizers and nutrients, less availability of water.

Training & Motivation:

He got training from Hon.Shri.Dadaji Lad on VishMuktSheti (Chemical Free Faring) and on cultivation of cotton by Dada Lad Technology. Along with this he is regularly guided by ICAR-CICR, Nagpur, KVK, Chhatrapati Sambhajnagar-1 for different management practices of cotton.

Initiatives:

He started cultivation of cotton with Dada Lad technology since last three years and till now he regularly do the same. He has medium to shallow type of land for cotton cultivation. In this Season he has

cultivated Rasi-659, Prabhat, Tera-9036 Bt Varieties of cotton for cultivation. He used 2kg seed per acre with 90 x 30 cm spacing. Due to following the practices as per Dada Lad Technology present crop in in very good condition. He was done 2-3 inter cultivation practices to keep crop weed free. He apply jeevamrut to crop in every month start form sowing. He also sprays jeevamrut, biomix, nimboli ark frequently for control of various pest and diseases. He used to do pruning in cotton by removing side branches (monopodial branches) after 30 DAS and removing of top of plant after 90 DAS (detopping in cotton). He also regularly follows agro advisories and Krishi Sallas provided by KVK. He regularly used vermicompost, jeevamrut, nimboli ark for cotton for protection from various pests and diseases and for nutrient management. He also uses Biomix (mixture of different useful microorganisms) produced by KVK, Chhatrapati Sambhajingar-1, which is found very useful for pest and disease management of cotton cultivation. He regularly participates in various extension activities and training programmes related to agriculture. He always uses mass media very effectively to collect new information in the field of agriculture.

Key Results / Facts/ Feedbacks:

- ✓ He is doing cotton production by Dada Lad technology since last 3 years. After adoption of Dada Lad Technology for cotton cultivation he experiences that,
- ✓ Plant population per acre in increased than conventional method.
- ✓ Boll size is also increased (on size and weight parameters) than conventional method.
- ✓ Uniform boll formation occurred and also maturity at one time is also occurred in this method.
- ✓ Due to uniform maturity picking is also very easy and quality of cotton is also very good in this method.
- ✓ Cotton crop can be harvested early due to uniform maturity so can cultivate another crop if have water.
- ✓ Excess vegetative growth of crop is controlled in this method than conventional method.
- ✓ Yield per acre is also more (nearly about 2, 3 quintal more) than conventional method.
- ✓ This method helps in minimum (or no) use of agrochemicals (as he follows VishMuktSheti).
- ✓ This year (2023), he is expected to have 10-12 quintal per acre yield.
- ✓ By first picking he is got 3-4 quintal of cotton from 01 acre area.

Important facts / achievements:

- ❖ Hon.Shri.Dadaji Lad visited farmer's field and appreciated his work/farming and suggested to do in future also.

- ❖ Many farmers and youth farmers from district visited his farm to take actual field experience which helps them to adopt this technology on their own field.

Suggestions by farmer:

- Experiences Shri. Dinesh Dnyaneshwar Rajput suggested that farmer could adopt Dada Lad Technology for cotton cultivation for better yield than conventional method.
- If required, he is also ready to guide farmers on cotton cultivation by dada lad technology.

Photographs: Manual Canopy Management in cotton



Success Story-22: Successful Adoption of High Density Planting System in cotton

enhanced farmer's income

Name of Farmer –Mr.Ramdas Jagdevrao Mahale

Village- Warvat Khanderao

Taluka – Sangrampur

District – Buldhana



Introduction

Mr.Ramdas Jagdevrao Mahale from village–Warvat Khanderao District –Buldhana cluster Paturda having 2 hectare of land under special cotton project. He adopted High Density Planting System in cotton.

Training and Guidance of KVK-

KVK Buldana-1 given training on High Density Planting System in cotton crop. The technological inputs, guidance, advisory services given by KVK and ICAR-CICR, Nagpur to Mr.Ramdas Mahale could boost his confidence to follow HDPS in cotton. Timeliness of cultural operation in cotton cultivation with proper guidance resulted in better cotton growth on the whole.

Practices Adopted-

With RCH 578 variety, cotton was sown at 90 x 15 cm spacing on 21st June, 2023. For canopy management he has taken two sprays of Mepiquat Chloride (growth regulator) at 45 and 60 days after sowing (DAS). Moreover, he also followed the recommended package of practices for nutrient and water management. Timeliness in pest management and need based plant protection measures could save his crop from yield losses.

- Crop was sown at 90 x 15 cm spacing
- First spray has taken at 45 DAS, 2nd spray has taken 60 DAS of Mepiquat Chloride for Canopy management.
- Each plant bear average 13 bolls
- Average Boll weight of 4.6g per boll

Mr. Ramdas Jagdevrao Mahale anticipates a very high seedcotton yield of about 17 quintals per acre. The impact of HDPS demonstrations is quite noteworthy that viz., Use of mepiquat chloride, micronutrient, recommended dose of fertilizers and pesticides effectively integrated into a technological package could double cotton production in the rainfed eco-region of Maharashtra.

Impact of HDPS: Higher Density Planting System (HDPS) in cotton facilitated uniform growth of plants. In addition, it became easier to provide the necessary nutrients by using recommended spacing of 90x15cm. In the very first year of the special project, he could harvest a bumper seedcotton yield of 17 quintals/acre and set a benchmark for other farmers to look upon.



Mr. Ramdas Jagdevrao Mahale Technical Guidance given by KVK Buldana-I



Excellent Boll Bursting at field of Mr. Spraying of Mepiquat Chloride

Success Story-23: High Density Planting System (HDPS) Cotton interventions proved successful in improving Cotton Productivity of rainfed cotton ecosystem

Name of Farmer - Mr. Vishal Arun Galkar

Village – Warvat Khanderao

Taluka – Sangrampur

District – Buldhana



Introduction –

Mr. Vishal Arun Galkar from Warvat Khanderao District –Buldhana sown two hectare of cotton crop under special cotton project and demonstrated High Density Planting System in cotton for the first time.

Training and Guidance of KVK -

ICAR-CICR Nagpur and KVK Buldana-1 provided technical knowhow on High Density Planting System in cotton.

Practices Adopted-

The crop was sown at 90 x 15 cm spacing on 21st June, 2023. Mr. Vishal Arun Galkar selected RCH 929 variety for this technology. A growth regulator known as Mepiquat Chloride was sprayed two times i.e. 40 and 55 DAS of cotton crop and it could help in better canopy management. He adopted recommended the package of practices for nutrient and water management and undertook need based plant protection measures time to time.

- Crop was sown at 90 x 15 cm spacing
- First spray has taken at 45 DAS, 2nd spray has taken 60 DAS Mepiquat Chloride.
- Number of boll per plant: 10-12 bolls
- Average Boll weight: 4.4 gram

Mr. Vishal Galkar anticipates a very high seed cotton yield of about 13 quintals per acre. The impact of HDPS demonstrations is quite noteworthy that viz., Use of mepiquat chloride, micronutrient, recommended dose of fertilizers and pesticides effectively integrated into a technological package could double cotton production in the rainfed eco-region of Maharashtra.

Impact of HDPS: High Density Planting System (HDPS) in cotton facilitated uniform growth of plants. In addition, it became easier to provide the necessary nutrients by using recommended spacing of 90x15cm. In the very first year of the special project, he could harvest a bumper seed cotton yield of 13 quintals/acre and set a benchmark for others farmers to look upon.



Guidance from scientists CICR Visit by Dr. S.K. Roy, Director, ATARI, Pune
Demonstration on High Density Planting System in cotton



Mr. Gopal Dose



Boll formation stage Implementation of IPM Package



Higher productivity with HDPS in cotton-Chickpea sequence
cropping enhances farmers' income under rainfed cotton ecosystem

Success Story- 24: Higher productivity with HDPS in cotton-Chickpea sequence cropping enhances farmers' income under rainfed cotton ecosystem

An innovative High Density Planting (HDPS) System of cotton cultivation developed by ICAR-CICR Nagpur was demonstrated for the first time on cotton farmers of Buldhana district of Maharashtra. In HDPS, the spacing of cotton crop has given significant importance so as to accommodate a high cotton population in one hectare and in shallow soil cotton is sown at 90 cm x 15 cm row spacing. This success story outlines the success of farmer Shri. Gopal Dose from Jastgaon village, Sangrampur taluka, Buldhana district of Maharashtra. The crop was sown at 90 x 15 cm spacing on 21st June, 2023. Mr. Dose selected suitable varieties for this technology. Two sprays of Mepiquat Chloride, a growth regulator for canopy management were taken at 45 and 60 DAS as suggested by ICAR-CICR Nagpur. The technological supports was given by KVKBuldana-I. He adopted recommended the package of practices for nutrient and water management and undertook need based plant protection measures time to time

- Crop was sown at 90 x 15 cm spacing
- Two spray of Mepiquat Chloride at 45 and 60 DAS
- Boll per plant: 10 bolls

High cotton yield with second Rabi Chickpea crop: With HDPS in cotton Mr. Dose could harvest 12 quintals of seed cotton from acre land. Due early harvest under HDPS in cotton he also took up sowing of gram crop on 15th November, 2023 in Rabi season. The sequence cropping with Chickpea – a legume crop could supports in improving the soil health and also enhance the food security and income stability of farmer.

Impact of HDPS: High Density Planting System (HDPS) in cotton facilitated uniform growth of plants. In addition, it became easier to provide the necessary nutrients by using recommended spacing of 90x15cm. In the very first year of the special project, he could harvest a bumper seed cotton yield of 12 quintals/acre and set a benchmark for others farmers to look upon.

Success Story – 25: Successful adoption of closer spacing in cotton enhanced farmer's income

In cotton crop cultivation in medium deep vertisols, cotton grown at closer spacing has unique significance and this technology demonstration were conducted by Buldhana cotton farmers during the crop season of 2023-24. Under closer spacing interventions cotton crop is sown at 90 cm x 30 cm and this success story is about the farmer Shri. Rameshvar Arbat who successfully conducted the demonstration at his farm in Sawali village, Sangrampur taluka, Buldhana district of Maharashtra. Suitable varieties for this technology have been selected by Mr. Arbat. He also used Mepiquat Chloride as first spray has taken at 45 DAS, 2nd spray has taken 60 DAS as a growth regulator for canopy management suggested by cotton advisory provided by ICAR-CICR Nagpur. He has adopted all the recommended a package of management practices for nutrient and water management. Under the guidance Buldhana KVK-1, he carried out necessary plant protection measures at periodic intervals.

- Crop was sown at 90 x 30 cm spacing
- First spray has taken at 45 DAS, 2nd spray has taken 60 DAS Mepiquat Chloride
- Average number of bolls in each cotton plant: 17
- Average Boll weight: 5 grams

Impact of closer spacing in cotton: With regards to the ancillary observations on cotton yield, each plant would bear 15 bolls with an average weight of 5 g and therefore 85 grams of seed cotton is anticipated. By adopting a crop geometry of 90 x 30 cm, there would be 14800 cotton plant in one acres land and this will give an average yield of 12 quintals of seed cotton per acre. It is worth noting that cotton production would increase due to Mepiquat chloride, micronutrients, recommended dose of fertiliser and use of pesticides use in cotton. Indeed, the farmer's efforts to ensure that they are integrated in a package is admirable.



Cotton at boll formation stage



Mr. Rameshvar Arbat

Success Story – 26: An innovativemanual canopy management (Farmer Led Technology) increases boll weight and dry matter partitioning efficiency in cotton

In cotton, there are two types of branches viz., monopodia (vegetative) and sympodial (reproductive). The monopodia are considered less productive than the sympodial branches. An innovative idea proposed by a progressive farmer Shri. Dadasaheb Lad was implemented by Shri. Kailash Dhole at his farm in Umara Atali village, Khamgaon taluka, Buldhana district of Maharashtra. The crop was sown at 90 x 30 cm spacing on 25th June, 2023. Mr. Dhole started cutting the monopodia of the cotton plants at 30-35 days after sowing which allowed the sympodia to grow longer. Once the cotton crop attained one meter height, it was de-topped. These processes enabled the cotton plants to utilize the sunlight and nutrients more efficiently and this increased the fruiting efficiency. He adopted recommended the package of practices for nutrient and water management and undertook need based plant protection measures.

- Crop was sown at 90 x 30 cm spacing
- Removal of monopodial branches at 30-35 days after sowing
- Detopping of cotton after one meter height of crop.
- Each plant bear average 35bolls
- Average boll weight of 4 gm

Due to Manual canopy management in closer spacing cotton, with 40 number bolls of 4 gram weight could realize seed cotton yield of 40 g/plant. At a spacing of 90 x 30 cm there would be of 14,000 per acre, which in turn gives 19 quintals seed cotton per acre.

It is noteworthy that cotton production could increase due to removal of monopodia, de topping after 75-80 days with drip irrigation on Cotton



Mr. Kailash Dhole sharing his experience



Mr. Dadasaheb Lad practically demonstrating removal of monopodial branches

Success Story-27: Closer spacing in cotton: Successful Module of cotton production in Jalgaon district of Maharashtra

Shri. Bhaskar Tapiram Chaudhary (mobile No: 9309172584) is a cotton farmer from Kalamsara Tq. Pachora Dist. Jalgaon (Maharashtra). He is a marginal farmer with medium deep soil having very limited irrigation facility. He used to sow cotton by conventional method with wider spacing of 120 cm x 30 cm. His cotton farming very frequently suffers from low cotton yield due to many biotic and abiotic stresses. This year with technological assistance from Krishi Vigyan Kendra Jalgaon II, he sown Rashi 659 cotton hybrid. He adopted closer spacing intervention under special project on cotton and planted Rashi 659 at closer spacing of 90 cm x 30 cm. The seed required for cotton sowing was slightly higher i.e. 4 packet per acre. The cotton was sown on medium deep soil. The crop was grown under protective irrigation and during boll development stage to mitigate the drought stress the farmer has given one life saving irrigation to the crop. The overall success of high cotton yield is attributed to timely management of nutrient and cotton pest, adoption of Dada Lad Technology for crop canopy management, selection of variety suitable for closer spacing and rainfed condition, optimum plant population by closer sowing (90 x 30 cm), less crop weed competition, use of recommended dose of fertilizer, adoption of INM and IWM practices.

Feedback:

- ✓ High yield of demonstration was due to Closer planting and Dada Lad technology.
- ✓ More number of sympodial branches
- ✓ Maximum number bolls per branch per plant, (8-10 bolls/ branch)
- ✓ Having Uniform boll maturity, which Reduce labour Cost
- ✓ Less Weed Problem
- ✓ Due to dense crop canopy soil moisture Conservation is Achieved
- ✓ Crop Performance is better in Closer planting Cotton even in long Dry Spell

Table 15: Performance of technology vis-à-vis Local check (Increase in productivity and returns)

Specific Technology	Yield Quintal/acre	Gross cost Rs./ acre	Gross income Rs./ acre	Net income Rs./ acre	B:C Ratio
Farmer practices / Control	8.00	24800	39600	14800	1.59
Demonstration	11.00	25800	54450	28650	2.11
% Increase over Control	37.5	9.44	-	-	-



Closer spacing in cotton: Successful Module of cotton production in Jalgaon district of Maharashtra



Reaping agronomic benefits of closer spacing under Special Project on Cotton

Success Story-28: Reaping agronomic benefits of closer spacing under Special Project on Cotton

Shri. Vikas Bhimrao Magar (mobile no: 8805600933) is a cotton farmer from UpkhedTq.Chalishaon Jalgaon (Maharashtra) District. He is marginal farmer having very limited irrigation facility. He used to sow cotton by conventional method with wider spacing of 120 cm x 30 cm. His cotton farming very frequently suffer from low cotton yield due many biotic and abiotic stresses. This year with technological assistance from Krishi Vigyan Kendra Jalgaon II, he sown Rashi 659 cotton hybrid. He adopted closer spacing intervention under special project on cotton and planted Rashi 659 at closer spacing of 90 cm x 30 cm. The seed required for cotton sowing was slightly higher i.e. 4 packet per acre. The cotton was sown on medium deep soil. The crop was grown under protective irrigation and during boll development stage to mitigate the drought stress the farmer has given one life saving irrigation to the crop. The overall success of high cotton yield is attributed to selection of variety suitable for closer spacing and rainfed condition, adoption of Dada Lad Technology for crop canopy management, increase in plant population due to planting cotton by closer crop geometry of 90 cm x 30cm, need based nutrient management through Fertigation, application of KSB and PSB through drip irrigation, decrease in crop weed competition and application of recommended dose of fertilizer.

Feedback:

1. High yield of demonstration was due to Closer planting and Dada Lad technology.
2. More number of sympodial branches
3. Maximum number bolls per branch per plant, (8-10 bolls/ branch)
4. Having Uniform boll maturity, which Reduce labour Cost
5. Less Weed Problem
6. Due to high density crop canopy helps in soil moisture Conservation.
7. Crop Performance is better in Closer planting

Table 16: Performance of technology vis-à-vis Local check (Increase in productivity and returns)

Specific Technology	Yield Quintal/acre	Gross cost Rs./ acre	Gross income Rs./ acre	Net income Rs./ acre	B:C Ratio
Farmer practices / Control	11.20	27430	50400	22970	1.83
Demonstration	15.00	29150	74250	45100	2.54
% Increase over Control	33.92	6.27	-	-	-

Success story- 29: Interventions on closer spacing in cotton under medium soil of Wardha, Maharashtra improves livelihood of cotton growers

Pramod Yelane from Panwadi village of wardha district is a cotton farmer and he used sow cotton by conventional method with wider spacing of 120 cm x 30 cm. he used to harvest a seed cotton yield of 5 quintal acre. This year with technological assistance from KVK, Selsura he sown Saket cotton hybrid. He adopted closer spacing intervention under special project on cotton and planted cotton at closer spacing of 90 cm ×30 cm. The seed required for cotton sowing was slightly higher i.e. 4 packet per acre. The cotton was sown on medium deep soil. The crop was grown under rainfed condition, however during boll development stage to mitigate the drought stress the farmer has given one life saving irrigation to the crop. The technology of growing cotton by following closer spacing in medium soil proved better than conventional crop. According to famers that, this technology is helpful for medium and light soil also where we can accommodate higher plant population. The scientists from ICAR-CICR, Nagpur have provided technical know how about canopy management by using PGR (Mepiquat chloride) spray. This could arrest the excessive growth of cotton crops as a result, more dry matter partitioning was observed in cotton bolls rather than in monopodial branches.



Farmers interacting with Dr. Y.G. Prasad, Director CICR Nagpur during training programme, 07.11.2023 at Panwadi village of Arvi tehsil Dist. Wardha.



Field view with cotton farmers and the scientists from CICR, Nagpur

The canopy management in cotton increased the boll weight strikingly which helps in boosting cotton yield. Farmer could harvest a better cotton yield of 9 quintal seed cotton in one acre which is higher by 1.5 to 2 q/acre. The increase seedcotton yield by 35 to 50 per cent over conventional cotton practice was witnessed by more than 145 farmers during the field day organized by KVK Selsura. The farmer now doing lot of farmers led extension in the Wardha district and he shared his mobile number 7798162922 with many cotton farmers.

Success Story-30: Improving cotton yield through closer spacing in cotton in the Agro-ecological zones of Peddavaduguru Mandal

Cotton farmer Mr. Kummetha Veershekar Reddy, from Peddavaduguru village for the first time cultivate Cotton, CCH 369 (Crystal Cotton Hybrid 369) with closer spacing. The farmer is having 17 acres field of black soils under complete rainfed conditions at Lakshumpalli village of Peddavaduguru Mandal out of which 2 acres is considered for closer spacing intervention. The cotton is sown by adopting Closer Spacing of 90 cm x 30 cm so as to maintain optimum plant population under medium deep soil with the objective of increasing the yield and quality of Cotton. KVK, Reddipalli has provided the trainings on cultivation of cotton in closer spacing and also trained the farmer how to manage the pest and disease by way of integrated pest management. Canopy management and timely correction nutritional deficiency in cotton crop could resulted in higher seed cotton yield. The farmer adopted closer spacing intervention and was able to achieve the bonus seed cotton yield of 2.2 quintals/acre than that of the normal crop spacing (110 cm x 40-45 cm) followed in the cotton. The farmer was very satisfied as he could be able to achieve higher yield compared to normal spacing due to adaption of closer spacing in cotton.

Table 17: Performance of technology compared to farmers practice

Sr. No.	Performance indicators	Crop Geometry adopted for cotton crop	Yield (q/acre)
1	Seedcotton yield in farmer practice	110 cm x 40-45 cm	9.4
2	Seedcotton yield in closer spacing intervention	90 cm x 30 cm	11.6
3		% increase in seedcotton yield over practice	23.4



Field view of cotton crop under closer spacing

Success story 31: HDPS cotton : a better option for productivity enhancement in light shallow soil

My name is Varsha Satish Somnathe resident of Ganeshpur, taluka and district Wardha. I am farming from last ten to twelve years mainly I am cultivating cotton, soybean, red gram, gram, wheat etc. crop in agriculture. I have total 3.5 acres area of irrigated land in which cotton is our main crop. For the last few years, I have been cultivating cotton in my field with a spacing of 120 X 60 in which I had got five to six quintals yield of cotton per acre area but this year, under the guidance of project scout working under HDPS and closer spacing under Krishi Vigyan Kendra Selsura, Wardha



Srimati Varsha Satish

I had sown cotton in 3.5 acres of HDPS i.e. 90 X 15 cm in my farm. seemed more appropriate. Under the project scout regularly provided the guidance during entire season i.e., participatory field visits for maintenance of crop condition, identification of diseases and insects pests and their management as well as observations recording on data sheet of farmers and field infestations also through the field training and field days, I got more information regarding to cotton crop and HDPS system. The scout under the project timely suggested that water and nutrient management, fertilizers, and its recommended doses, for the management of pink bollworm should use pheromone trap. Also, use of PGR (Mepiquit chloride 5%) on cotton crop it reduced the vegetative growth of cotton crop and developed sympodial branches and increased the boll bearing capacity of cotton plant and early cotton bolls were formed with weighted cotton bolls. and I followed such instructions time to time that results as I have increased yield of cotton by 30 to 40% as compared to previous year and save the expenditure as well. So, I got 12 quintals yield of cotton per acre and total 42 quintals yield of cotton in the entire 3.5 acre area. Varsha Somnathe expressed in his speech that this project has given good results to me and if in future without subsidy I will cultivate cotton in this way in the coming years as well.

Success story 32: Closer spacing with manual canopy management enhances cotton productivity in Parbhani district of Maharashtra

Mrs. Lata Rajendra Soni from Dharmapuri, Taluka, District- Parbhani of Maharashtra adopted a closer spacing in cotton. The cotton Moksha (Aditya Agritech Pvt. Ltd) variety was sown on 18/06/2023. The cotton crop in medium soil was sown at closer spacing of 90 cm x 30 cm. For canopy management she adopted Dada Lad Technology in Cotton, wherein monopodial branches were removed manually 40 DAS and at 90 days after sowing of cotton detopping of cotton also done. Timely nutrient management were done wherein at the time of sowing 50 kg of 10:26:26 NPK along with Micronutrient 10 kg was given as basal dose to the cotton crop. Second dose fertilizer 25 kg Urea + 50 kg DAP at 30 days after sowing given. At 60 DAS again 25 kg of Urea was top dressed. To arrest the excessive vegetative growth of cotton. For the management of pest and diseases, 1st Spraying of Neemark 5% was done. Second spray includes Flonicamid 50% WG (3 gm/10 liter of water) + Carbendazim 12 % + Mancozeb 63 % WP (20 gm/10 liter of water). Third spray of Fipronil 18.87 % SC (7.5 ml/10 liter of water) + Emamectin Benzoate 5 SG (4 gm/10 liter of water) was also carried out. .



Mrs. Lata Rajendra Soni



For the management of pest and diseases in cotton she also took 4th Spraying of Pyriproxyfen 10 EC (20 ml/10 liter of water) + Copper oxychloride 50 % WP (25 gm/10 liter of water). The crop was grown rainfed and crop growth was satisfactory showing higher boll weight.

Table 18: Green Boll weight and Cotton lint weight from on the lower sympodial branches

Sr. No.	1	2	3	4	5	Average (gm)
Green Bolls Wt. (gm)	32.22	31.40	29.90	33.60	34.90	32.40
Cotton Lint (gm)	7.10	6.90	7.05	7.25	6.70	7.00

Table 19: Green Boll weight and Cotton lint weight from on the middle sympodial branches

Sr. No.	1	2	3	4	5	Average (gm)
Green Bolls Wt. (gm)	30.50	31.44	33.20	32.04	34.33	32.30
Cotton Lint (gm)	6.40	6.90	7.15	7.35	6.99	6.95

Table 20: Green Boll weight and Cotton lint weight from on the upper sympodial branches

Sr. No.	1	2	3	4	5	Average (gm)
Green Bolls Wt. (gm)	31.99	32.30	28.94	33.24	35.20	32.25
Cotton Lint (gm)	6.20	7.15	7.16	6.26	6.75	6.70

Table 21: Economic returns and benefit cost ratio as influenced by closer spacing in cotton

Practice	Yield (q/acre)	Gross Cost (Rs. /acre)	Gross income (Rs. /acre)	Net income (Rs. /acre)	B:C ratio
Demonstration	16.70	40912/-	121910/-	80998/-	2.98
Control	8.90	40706/-	62300/-	21594/-	1.53

❖ Output-

Demonstration was conducted by using Dada Lad technology in Cotton production. Results shows that actual yield of demonstration plot was 16.70 q/acre as compared to control 8.90 q/acre.

As regards to economics, it is found that demonstrated farmers were getting returns of 2.98 against control plot 1.53.



Shri. Dada Lad, an innovative cotton farmer visited the demonstration



Dr. Sharad Gadakh Vice-chancellor, Dr.Panjabrao Deshmukh Krishi Vidyapeeth, Akola

Success story- 33: HDPS cotton farming in Surendranagar, Gujrat increases farmer's income

Shri Narotambhai Popatbhai Shiyaniya (Age: 52 year) is native of Anindra village of Wadhawan taluka a small farmer having five acre land. He is Progressive farmer engaged in agriculture since last 15 years. Before inception of special project on cotton, he was growing cotton by conventional method under wide row planting. He used to apply more chemical fertilizers and pesticides to get higher seed cotton yield. But this could only stabilize cotton yield and resulted in higher cost of cultivation which resulted in reduction of net profit. Cotton is main crop in his field. Narotambhai is young energetic farmer, he started to participate in farmer meetings etc. He comes in contact with KVK through ATMA and got advice from agricultural experts of KVK. He decided to adopt HDPS farming on his own field with objective of increasing seed cotton yield as well as more net returns from cotton farming.



Technology: Under HDPS cotton he grows the cotton crop by following crop geometry of 90 cm x 15 cm and maintained minimum cotton plants of 25000 per acre. For the management of canopy spraying of PGR i.e. Mepiquat Chloride (10ml/10 lit of water) was also taken.

Table 22: Economic returns and benefit cost ratio as influenced by HDPS in cotton

No.	Year	Seed cotton yield (quintal/ha)	Profit(rs.)
1	2023	20	90000

Impact: The data presented in Table indicated that HDPS intervention in cotton improves the profitability of cotton

He earned good income from his farm produce by doing value addition. He encourages the farmers of surrounding villages. Other farmer also shown a great interest to take the cotton by adopting HDPS with compact and short duration cotton hybrids in the years to come.

Success story- 34: Closer spacing with pink bollworm management in Raichur

Karnataka helps in augmenting cotton production

Mr. Veeresh is a resident of Adavikhanapur village, Tehsil : Manvi, District : Raichur, Karnataka. He associated with farming for the last 18 years, owned 3.75 acres under rainfed condition and witnessed reduction in yield of Bt. cotton due to infestation of Pink Bollworm since last 2-3 years. During the year 2021-22 he cultivated cotton over 5 acres including lease land and got Crop losses due to the heavy infestation of Pink Bollworm which caused 40 % of crop loss. During 2023-24 he cultivated over the same area with technical guidance and motivation from KVK Scientists Raichur and K. Madhubabu Staff of SIMA CDRA, he got the opportunity to participate in the Special Pilot Project and demonstrated impact of closer spacing on seed cotton yield of cotton crop. Under the guidance of SIMA CDRA on medium black soil, farmer choose cotton hybrid US7067 (US Agri seeds) and used 4 packets per hectare. The entire village's falls under the rainfed ecosystem, hence Special Cotton Project field demonstration was implemented on his 2.5 acre of land in rainfed situation. Despite of deficit rainfall, he harvested a very good seed cotton yield of 7.5 quintal/acre, which is higher by 1.5 quintal/acre over conventional. It was noteworthy that due closer spacing intervention cotton harvesting was completed in two pickings only. Field day conducted on 18.12.2023 and 12 fellow farmers attended. The farmer is very happy to know about the new technology and wished to continue the same for the coming seasons. To manage cotton pest like pink bollworm, dissemination of pink bollworm management strategies were also implemented under the ICAR-CICR Special Pilot Project by Ministry of Agriculture and Farmers welfare. In addition to training on closer spacing cotton, the KVK scientists and SIMA CDRA project staff, also regularly provided the guidance to the cotton farmer during the entire crop season. The training comprises use the Mepiquat Chloride for canopy management, use of PBW Lure Trappers and Magic [Yellow] stickers and other IPM technologies. Moreover, participatory field visits were carried out for identification of insects and their stages. Observations on Pink Bollworm infestations in cotton were also taken. ETL based insecticide sprays taken for the timely management of Pink Bollworm in cotton. This could helped in increasing seedcotton yield by 25 % over farmers practice also due to IPM strategies reduction in 3-4 sprays BC ratio enhanced to 1.25 : 1

Success story- 35: HDPS cotton a new *mantra* for improving productivity of light soils of

Telangana

KVK, Bellampalli conducted field days and training programmes about HDPS technology by collaborating with seed companies like Rashi seed company Pvt. Ltd and Mahyco seed company that helps the farmers to adopt the HDPS technology

Sri.Durgam Suman aged 45 years is an inspiration to all cotton growing farmers in Telangana who wants to adopt an innovative technology of growing cotton to improve productivity. His handwork and dedication has led to success story being shared all across Telangana.



**Sri. Durgam Suman
Somnathe**

The farmer got motivated by KVK, Bellampalli & Progressive Farmer, Sri. Vadai Shankar due to his extensive work on HDPS Cotton with an average yield of 16 q/acre during 2022-23 who bagged the Best Progressive Farmer Award by PJTSAU.

During this *khari*, 2023-24, the farmer purchased No. of packets of Rashi Swift (RCH 971) for an area of 1 acres land to cultivate cotton crop under High Density Planting System and 1 acre of cotton in conventional method under the guidance of KVK, Bellampalli, Mancherial District.

He sprayed the plant growth regulator Mepiquat chloride (Chamatkar) at 45 and 60 DAS for canopy management which facilitate compact cotton growth with more number of sympodial branches with bigger bolls.

Nutrient Management: For achieving optimal yields and sustainability, he adopted the nutrient management strategy wherein, HDPS planting he applied 36:18:18 kg/acre (N: P₂O₅:K₂O) through Urea and DAP, 20-20-0-13, 19-19-19 and Planofix.

The optimal nutrient management with better canopy management techniques in HDPS leads to uniform crop matured. In the very first picking of cotton farmer could harvested 7 quintals per acre which was 55 % more than the conventional method of growing cotton. All these implementations helped him to gain more yield than the traditional method. The results revealed that, the percent increase in yield by 55.55% with an average net returns of Rs. 22,471 per acres on 1st picking.



Success story- 36: More agronomic yield advantage obtained in closely spaced cotton in Jangaon Telangana

Cotton farmer Vangapadla Kumara swamy from Komalla village, Jangaon district under guidance of Yadadri Bhuvanagiri, Telangana DAATT Centre (PJ TSAU) cultivated cotton under closer spacing on five acres of land. The crop geometry of 90 cm x 30 cm for CCH-369 cotton hybrid was chosen wherein @ 3 packets of seed per acre were used for dibbling. While targeting technologies to agro-ecological zones in the rainfed ecosystem with medium deep soil of Jangaon district of Telangana, closer spacing cotton was demonstrated under special project on cotton. The scientists from DAATT Centre (PJ TSAU) and ICAR-CICR, Nagpur have provided technical know how about canopy management by using PGR (Mepiquat chloride) spray. Two sprays of PGR could arrest the excessive growth of cotton crops as a result, more dry matter partitioning was observed in cotton bolls rather than in monopodial branches. The canopy management in cotton increased the boll weight strikingly which helps in boosting cotton yield. In general, 37% more yield advantage was obtained in CS technology compared to normal Bt cultivation. To perceive the success of cotton farmer, 75 farmers from neighbouring areas also participated in the one day training programme conducted on 28/10/2023. ICAR-CICR scientists also visited this farmer's field on 03/10/2023. Regular visits were made by Dr.B.Anil Kumar, Principal Scientist & Coordinator, DAATT Centre and Young Professionals. The farmer was satisfied with this technology, showed a positive response to continue this system. The farmer was suggesting this technology to the fellow farmers.

Table 23: Package of practices adopted under closer spacing demonstration

No. of PGR sprayings	2
Nutrient Management	Urea, DAP and 28-28-0, 19:19:19 and Agromin max
Chemicals sprays for control of pests and diseases	Acephate @1.5 gl/l and Diafenthiuron 250 g/acre for control of sucking insect pests, Chloropyriphos 2.5ml/l for the control of Pink bollworm
IPM practices	Pheromone traps @ 4/acre were installed
No. of pickings	3
Yield achieved	11 q / acre

Table 24: Yield advantage and monetary returns obtained under closer spacing

Particulars	Normal method	HDPS technology
Total expenditure	22,500	25,000
Market price (per q)	7010	7010
Yield	8 Quintals	11 Quintals
Gross income (Rs)	56,080	77,110
Net income (Rs)	33,580	52,100

Farmer with Team of cotton scientist



Success story- 37: HDPS technology pays more net returns to cotton farmer in

Warangal district

ShriDhanikulaVenkateswarlu is a resident of Anantharam village, Geesugondamandal, and Warangal district. He was associated with farming for last 30 years, owned 12 acres land under rainfed and irrigated condition. He is cultivating cotton over 25 years and followed different spacings viz., 90 cm x 90 cm, 90 cm x 60 cm and 120 cm x 60 cm etc. and for the first time in the year 2023-24, he adopted HDPS technology with technical guidance and motivation from KVK, Mamnour scientists and followed spacing of 90 cm x 15 cm with seed rate of 6 packet /acre. KVK scientists regularly provided the guidance throughout the season, training and monitoring field visits were conducted.



**Shri Dhanikula
Venkateswarlu**

Demonstrations on spraying of Mepiquat chloride (plant growth regulator) and IPM practices for pests and diseases management were suggested. Initially sprayed neem oil 5% @ 1L/acre, installed pheromone traps for mass trapping of pink bollworm @ 8/ acre and also installed yellow sticky traps for control of sucking pests @ 10/acre besides need based chemical control. Spraying of Mepiquat chloride (Plant growth regulator) @ 200 ml/acre twice at 45 days after sowing and 65 days after sowing respectively. Since luxuriant growth was observed with top 5 internodal length of 20 cm, advised him for third spray of mepiquat chloride @ 200 ml/acre. Two pickings were completed and a yield of 12 q/acre was expected at the end of 3rd picking. While, in normal Bt cotton cultivation, yield of 8 q/acre is expected. When compared to normal Bt cotton, yield advantage of 33% can be realized with expected BC ratio 2.97:1.0 as against 1.78: .1.0 in normal Bt cultivation.

Table25: Seedcotton yield, gross returns and benefit cost analysis of HDPS technology

Practice	Cost of cultivation/acre	Yield (quintals/acre)	Gross returns (Rs/acre)	Net returns (Rs/acre)	B: C ratio
Normal Bt Cultivation	30000	8	53600	23600	1.78: 1.0
HDPS technology	27000	12	80400	53400	2.97: 1.0



Success story -38: Improving cotton profitability with HDPS and canopy management

Shri R Surender reddy is a resident of Muddunur village, Duggondimandal, and Warangal district. He was associated with farming for last 50 years, owned 10 acres land under irrigated condition. He is cultivating cotton over 40 years and followed different spacings viz., 90 cm x 90 cm, 90 cm x 60 cm and 120 cm x 60 cm etc. and for the second time in the year 2023-23 and 2023-24, he adopted HDPS technology with technical guidance and motivation from KVK, Mamnoor scientists and followed spacing of 90 cm x 15 cm with seed rate of 2.5kg/acre. KVK scientists regularly provided the guidance throughout the season, training and monitoring field visits were conducted.



Shri R Surender Reddy

Demonstrations on spraying of mepiquat chloride (plant growth regulator) and IPM practices for pests and diseases management were suggested. Initially sprayed neem oil 5% @ 1L/acre, installed pheromone traps for mass trapping of pink bollworm @ 8/ acre and also installed yellow sticky traps for control of sucking pests @ 10/acre besides need based chemical control. Spraying of mepiquat chloride (Plant growth regulator) @ 200 ml/acre twice at 45 days after sowing and 65 days after sowing respectively. Since luxuriant growth was observed with top 5 inter-nodal length of 20 cm, advised him for third spray of mepiquat chloride @ 200 ml/acre. Three pickings were completed and a yield of 13 q/acre was obtained. While, in normal Bt cotton cultivation, yield of 10 q/acre is achieved. When compared to normal Bt cotton, yield advantage of 23% can be realized with expected BC ratio 2.84:1.0 as against 2.23: .1.0 in normal Bt cultivation.

Success story- 39: Better cotton production with HDPS in Anantharam, Mandal of Warangal Telangana

Shri Peddi Anjaiah is a resident of Anantharam village, Geesugondamandal, and Warangal district. He was associated with farming for last 60 years, owned 9 acres land under rainfed and irrigated condition. He is cultivating cotton over 55 years and followed different spacings viz., 90 cm x 90 cm, 90 cm x 60 cm and 120 cm x 60 cm etc. and for the first time in the year 2023-24, he adopted HDPS technology with technical guidance and motivation from KVK, Mamnoon scientists and followed spacing of 90 cm x 15 cm with seed rate of 2.5kg/acre. KVK scientists regularly provided the guidance throughout the season, training and monitoring field visits were conducted.



Shri Peddi Anjaiah

Demonstrations on spraying of mepiquat chloride (plant growth regulator) and IPM practices for pests and diseases management were suggested. Initially sprayed neem oil 5% @ 1L/acre, installed pheromone traps for mass trapping of pink bollworm @ 8/ acre besides need based chemical control. Spraying of Mepiquat chloride (Plant growth regulator) @ 200 ml/acre thrice at 45 days after sowing and 65 days after sowing respectively. Three pickings were completed and a yield of 14 q/acre was obtained. While, in normal Bt cotton cultivation, yield of 11 q/acre is achieved. When compared to normal Bt cotton, yield advantage of 22% can be realized with expected BC ratio 3.27:1.0 as against 2.45: 1.0 in normal Bt cultivation.

Success story -40: Enhancing profitability of cotton farmers in Venkatapuram, Mandal of Telangana State

Shri GokeMallaiah is a resident of Venkatapuram village, Inavolemandal and Hanamkonda district. He is associated with farming for last 45 years, owned 10 acres land under irrigated condition. He is cultivating cotton over 38 years and followed different spacings viz., 90 cm x 90 cm, 90 cm x 60 cm and 120 cm x 60 cm etc. For the first time in the year 2023-24, he adopted HDPS technology with technical guidance and motivation from KVK, Mamnoor scientists. He cultivated HDPS cotton by following spacing of 90 cm x 15 cm with seed rate of 2.5kg/acre. KVK scientists regularly provided the guidance throughout the season, training and monitoring field visits were conducted.



Shri Goke Mallaiah

Demonstrations on spraying of mepiquat chloride (plant growth regulator) and IPM practices for pests and diseases management were suggested. Initially sprayed neem oil 5% @ 1L/acre, installed pheromone traps for mass trapping of pink bollworm @ 8/ acre and also installed yellow sticky traps for control of sucking pests @ 10/acre. Spraying of mepiquat chloride (Plant growth regulator) @ 200 ml/acre twice at 45 days after sowing and 65 days after sowing respectively.

Since luxuriant growth was observed with top 5 inter-nodal length of 20 cm, advised him for third spray of mepiquat chloride @ 200 ml/acre. Three pickings were completed and a yield of 14 q/acre was obtained. While, in normal Bt cotton cultivation, yield of 10 q/acre is achieved. When compared to normal Bt cotton, yield advantage of 28% can be realized with expected BC ratio 3.55:1.0 as against 2.13: .1.0 in normal Bt cultivation.

Success story- 41: HDPS in cotton a sustainable way of increasing cotton production in Aravaiahpally, Mandal of Telangana State

Shri Ella Raju is a resident of Aravaiahpally village, Nallabelly mandal, and Warangal district. He is associated with farming for last 24 years, owned 6 acres land under rainfed and irrigated condition. He is cultivating cotton over 20 years and followed different spacings viz., 90 cm x 90 cm, 90 cm x 60 cm and 120 cm x 60 cm etc. During the year 2023-24 for the first time in, he adopted HDPS technology with technical guidance and motivation from KVK, Mamnour scientists. A crop geometry of 90 cm x 15 cm with seed rate of 2.5 kg/acre was adopted for HDPS cotton. KVK scientists regularly provided the guidance throughout the season, training and monitoring field visits were conducted.



Shri Ella Raju

Demonstrations on spraying of mepiquat chloride (plant growth regulator) and IPM practices for pests and diseases management were suggested. Initially sprayed neem oil 5% @ 1L/acre, installed pheromone traps for mass trapping of pink bollworm @ 8/ acre besides need based chemical control. Spraying of Mepiquat chloride (Plant growth regulator) @ 200 ml/acre thrice at 45 days after sowing and 65 days after sowing respectively. Two pickings were completed and a yield of 12.5 q/acre was obtained. While, in normal Bt cotton cultivation, yield of 8.5 q/acre is achieved. When compared to normal Bt cotton, yield advantage of 32% can be realized with expected BC ratio 2.9:1.0 as against 1.65: 1.0 in normal Bt cultivation.

Success story -42: HDPS cotton boost cotton productivity in rainfed areas of Karanja lad cluster of Washim, Maharashtra

Cotton farmer Sachin Uttamrao Ghule from Vilegaon village of district Washim under the guidance KVK Washim demonstrate HDPS cotton technology. The HDPS cotton demonstration were taken on 2 acres of land which comes under the category of light to medium soil. The farmers in the area every year experienced the yield losses due erratic rainfall and terminal droughts at boll development stage of cotton. The crop geometry of 90 cm x15 cm was used in the HDPS intervention where major emphasis was given on the higher plant population of 74000 per hectare. The cotton hybrid RCH-929 was chosen and higher seed rate of 5 packets per acre was used under HDPS intervention. Cotton variety with compact canopy, synchronized boll development characteristics and early maturity was found most suitable under HDPS interventions. Two protective irrigations were scheduled to the cotton crop at square and boll development stage, this could save the crop from square and boll drop. Farmers expressed their satisfaction with the technical backstopping on cotton crop for higher productivity through efforts by KVK Washim - CICR Nagpur Special project on Cotton. Under the project scout regularly provided the guidance during entire season i.e., participatory field visits for maintenance of crop condition, identification of diseases and insects pests and their management as well as observations recording on data sheet of farmers and field infestations also through the field training and field days, I got more information regarding to cotton crop and HDPS system. Field day was conducted in his field, and 48 fellow farmers attended. Due to the HDPS adoption he could harvest seedcotton of 12.5 q/acre which significantly higher than last year cotton harvest of 7 q/acre. The new HDPS techniques of cotton planting developed by ICAR-Central Institute for Cotton Research, Nagpur augmented the cotton yield by 53 % over conventional method of cotton planting. He earned good income from his cotton produce because of earliness in boll bursting and synchronous picking that resulted in early harvest thereby escaping pink bollworm attack. In case of HDPS farming they get more yield than conventional farming. He encourages the farmers of surrounding villages also for adopting HDPS farming and thus HDPS in cotton paves a new way of cotton cultivation in state of Maharashtra.



Sachin Uttamrao Ghule with cotton crop

Success story- 43: HDPS Cotton Technology in Mancherial district, Telangana

Introduction: Sri. Akkepelli Rajesh s/o Shankar is a lead cotton growing farmer from Rampoor village, Bheeminimandal in Mancherial district, Telangana. He owns 5 acres of dryland and 4 acres of irrigated land and cultivates cotton, redgram, blackgram and sesame

Background information with problems/challenges/issues: Mr. Rajesh (38 years old) knows agriculture by moving with his father and learned on the cultivation practices. He is an innovative farmer and follows new adoptive technologies with his enthusiasm. He cultivates cotton as major crops prevailing odd situations like., of erratic rainfall and soil conditionsthe production from the cotton was very low which made him to search for an innovative technology of growing cotton.

Interventions: Mr. Rajesh got inspired by the Awareness programme of HDPS Cotton conducted by KVK, Bellampalli in collaboration with seed companies like Rasi Seed Company Pvt. Ltd. HDPS technology. Thereby the farmer decided to adopt this technology in light and medium soils to increase the productivity of the cotton.

Practices followed

In his own 2 acres of land, the farmer decided to grow cotton by adopting High density planting system. He ploughed the land and applied 10 tons of manures and fertilizers of 48:24:24 Kg NPK as per the recommendations. On 26th June, 2023 he sown the Rasi hybrid RCH 971(Rasi Swift) which was the compact and early maturing genotypes and seed rate of 5 packets/acre used instead of 2packets by following spacing of 90 X 15cms. A pre-emergence herbicide Pendimethalin was sprayed within 48 hours of sowing. The nutrients were applied based on soil test recommendations at different crop stages like sowing, vegetative stage, Square formation and flowering. The Plant growth regulators (PGR) Mepiquat chloride was sprayed at a dose of 1ml/litre of water to regulate the plant height and to ensure uniform maturation at 45 and 65 days after sowing. He sprayed NAA @400ppm to control the boll dropping at 120 DAS.

Outcome/Result

The farmer stated that, in adoption with HDPS cotton uniform maturation of bolls noticed which reduced the labour costs and also the quality of the cotton is good. The yield obtained from 1st picking was around 8 quintals/acre.



Field view of Demostration

Success story- 44: Boost in the productivity of white gold with new HDPS practices

There was significant growth in the productivity of cotton which is also known as “White Gold” by the adoption of new intervention and cultivation practices through High Density Planting System (HDPS), by Molaka Venkata Narayana, a farmer from the countryside of the village Mallenipalli, Peddavaduguru Mandal, Ananthapuramu district of Andhra Pradesh. He owns a land bit of 3 acres and cultivated the cotton hybrid from Rasi seeds known Rasi Swift (RCH 971 BG II) which is a compact variety with short duration.



The

cultivation took place with the collaboration and guidance of KVK, Reddipalli and the private firm Rasi Seeds Private Limited under NFSM-Special Project on Cotton which operated on PPP mode. He had sown the seeds with the adoption of spacing from HDPS as 90 X 15 cm during the last week of June of Kharif 2023. He had sown the seeds with the help of tractor.

Table 26:Details of package of practices adopted under closer spacing

Package of practices	Closer spacing	Farmers Practice
Variety	Rasi Swift	Rasi Neo
Seed rate	6 packets/acre	4 packets/acre
Spacing	90 X 15 cm	120 X 45 cm
Pickings	thrice	twice

He had taken up the package of practices which were given by CICR for HDPS cultivation. Mepiquat chloride (Trade Name- Chamatkar) was not sprayed because of the scarce rainfall which led to reduced plant growth and vigor. However, he managed to give irrigations by water tankers which made his crop grow very well when compared to others cotton fields in the surroundings. Field days were conducted at his field to demonstrate the practical results of adopting HDPS cultivation. The boll weigh was also very good and size was very attractive and the boll weight ranged from 5.4 to 6.1 grams. The farmer was very happy with the yields he achieved which was 17.9 quintals per acre and he also recommended to follow the HDPS intervention to his fellow farmers. He currently did not sell the produce as the rates at which cotton is being procured is not on par with his expectation. He achieved a huge difference of 33% increase in the yield of his cotton when compared to others who followed conventional practices.

Success story- 45: Closer Spacing (CS) in cotton proved better than conventional cotton cultivation

CICR has also given one more intervention called Closer Spacing (CS) which is mostly similar to that of HDPS and on par in all the cultivation practices except for the plant spacing's which is 90 X 30 cm in closer spacing and in HDPS it is 90 X 15 cm. Even this intervention was undertaken by few farmers and a farmer named Kummetha Veer Shekar Reddy from Peddavaduguru Village of Peddavaduguru Mandal had achieved very good yields when compared to the adjoining fields where conventional cultivation practices were undertaken. He achieved an overall increment of 23% in the cotton yield and was able to get 11.6 quintals by adopting Closer Spacing intervention and he had gone through three pickings and he also used 6 packets of seeds for sowing. He also encouraged the farmers of Peddavaduguru to adopt closer spacing from next growing season. One field day was conducted in his field to show the farmers the results of adoption of closer spacing and the Programme Coordinator explained about the package of practices and interventions to increase the yields of cotton in the current scenario where the yields of cotton are being reduced. He is also waiting for a good price to come to sell the cotton he has grown. Mepiquat chloride was not recommended because of scarce rainfall.



Table 27:Details of package of practices adopted under closer spacing

Package of practices	Closer spacing	Farmers Practice
Variety	CCH 369 BG II	CCH 003 BG II
Seed rate	6 packets/acre	4 packets/acre
Spacing	90 X 30 cm	120 X 60 cm
Pickings	thrice	twice



Success story- 46: Newer techniques of cotton cultivation with closer spacing pays more to farmers

One more farmer named Guraka Chitambaram Reddy from Peddavaduguru Village of Peddavaduguru Mandal has also taken up the package of practices required for Closer spacing cultivation of cotton. His land had a very fertile black soil and it led to very good growth of the crop. Mepiquat chloride was also not recommended here because of scarce rainfall. He used 6 packets of seeds for sowing and took very good measures to curb the pests and diseases in his field. A training programme was conducted at his field along with one field day in the presence of Subject Matter Specialist (Plant Protection) and Programme Coordinator.



Guraka Chitambaram Reddy

Table 28: Details of package of practices adopted under closer spacing

Package of practices	Closer spacing	Farmers Practice
Variety	CCH 369 BG II	CCH 003 BG II
Seed rate	6 packets/acre	4 packets/acre
Spacing	90 X 30 cm	120 X 60 cm
Cotton Pickings	thrice	twice

More than 50 farmers have attended the training and field day to know about the package of practices in closer spacing so that these farmers can too adopt this intervention in the upcoming seasons to improve their cotton yields and get more profits. This farmer has achieved a total of 12.1 quintals which was 24% more than that of the yield of the conventional practices adopted fields. Thus due higher seedcotton yield farmers could get better net returns and are happy with special project in cotton .

List of districts and project team of CICR, Nagpur

District	Name	Designation
Amereli, Rajkot, Surendranagar	Dr. Vivek Shah	Scientist
	Dr. R. Jaya Kumarvaradhan	Scientist
	Dr. Joy Das	Scientist
Alirajpur, Dhar, Jhabua, Ratlam	Dr. Ramkrushna GI	Sr. Scientist
	Dr. Rahul M. Phuke	Sr. Scientist
	Dr. Deepak Nagrale	Sr. Scientist
Akola	Dr. Ramkrushna GI	Sr. Scientist
Akola	Dr. Shailesh Gawande	Sr. Scientist
Amravati	Dr. Babasaheb B. Fand	Sr. Scientist
Beed	Dr. A. Manikandan	Sr. Scientist
Buldhana	Dr. Shivaji Thube	Scientist
Chandrapur	Dr. T. Prabhulinga	Scientist
Dhule	Dr. J. H. Meshram	Pr. Scientist
Jalgaon	Dr. J. H. Meshram	Pr. Scientist
Chatraptai Sambhajinagar	Dr. V. S. Negrare	Pr. Scientist
Jalna	Dr. S. Mahajan	Pr. Scientist
Nagpur	Dr. M. Sarvanan	Sr. Scientist
Nagpur	Dr. A. Manikandan,	Sr. Scientist
Nanded	Dr. D. V. Patil	Pr. Scientist
Nandurbar	Dr. Babasaheb B. Fand	Sr. Scientist
Nandurbar	Dr. Dipak Nagrale	Sr. Scientist
Parbhani	Dr. Neelkanth Hiremani	Scientist
Wardha	Dr. Rajkumar Ramteke	Principal Scientist
Wardha	Dr. Shailesh Gawande	Sr. Scientist
Washim	Dr. Rakesh Kumar	Scientist
Yavatmal	Dr. S. S. Patil	SMS, KVK

*Annexure II***List of districts and project team of CICR, Sirsa**

District	Name	Designation
Bhilwara	Dr. Amarpreet Singh	Scientist
Chittorgarh	Dr. Subhash Chandra	Scientist
Rajsamand	Dr. Satish Kumar Sain	Pr. Scientist

*Annexure III***List of districts and project team of CICR, Coimbatore**

District	Name	Designation
Nandyal	Dr. (Mrs.). J. Annie Sheeba	Senior Scientist
Palnadu	Dr. (Mrs.). J. Annie Sheeba	Senior Scientist
Anantpur	Dr. (Mrs.). P. Valarmathi	Scientist
Guntur	Dr. (Mrs.). K. Baghyalakshmi	Scientist
Krishna	Dr. (Mrs.). K. Baghyalakshmi	Scientist
Kurnool	Dr. (Mrs.). P. Valarmathi	Scientist
Yadgir	Dr. K. P. Raghavendra	Senior Scientist
Dharwad	Dr. T. Prabhulinga	Scientist
Raichur	Dr. Neelkanth Hiremani	Scientist
Erode	Dr. (Mrs.). P. Nalayini	Principal Scientist
Coimbatore	Dr. (Mrs.) Isabella Agarwal	Principal Scientist
Vikarabad	Dr. (Mrs.). J. Gulsar Banu	Principal Scientist
Salem	Dr. K. Sankaranarayanan	Principal Scientist
Perambalur	Dr. (Mrs.). P. Nalayini	Principal Scientist
Virudhunagar	Dr. K. Sankaranarayanan	Principal Scientist
Tiruppur	Dr. G. Balasubramani	Pr. Scientist
Madurai	Dr. S. Manickam	Principal Scientist
Namakkal	Dr. S. Manickam	Principal Scientist
Warangal	Dr. A. Manivannan	Senior Scientist
Siddipet	Dr. R. Raja	Principal Scientist
Suryapeth	Dr. (Mrs.). S. Usharani	Principal Scientist
Sangareddy	Dr. K. Rameash	Principal Scientist
Nalgonda	Dr. (Mrs.). M. Amutha	Principal Scientist
Ranga Reddy	Dr. (Mrs.). M. Amutha	Principal Scientist
Mancherial	Dr. A. Sampath Kumar	Senior Scientist
Nagar Kurnool	Dr. M. Sabesh	Senior Scientist
Jangoan	Dr. K. Shankar Ganesh	Senior Scientist
Karimnagar	Dr. K. Shankar Ganesh	Senior Scientist
Khammam	Dr. (Mrs.). D. Kanjana	Senior Scientist
Mahaboobabad	Dr. (Mrs.). D. Kanjana	Senior Scientist
Adilabad	Dr. A. Manivannan	Senior Scientist

List of Seed company under Special Project on Cotton

Federation of Seed Industry of India (FSII)		
Ratna Kumria	Director Agri Biotechnology at Alliance for Agri Innovation	Federation of Seed Industry of India (FSII)
Mahesh K. Chavan	Sr. Breeder Cotton	Bioseed Research India
Srinivas Reddy N	National Product Development Manager	SeedWorks International Private Limited
Ishvar Patel	Crop Manager- Cotton	Crystal Crop Protection Ltd.
Sambhaji Magar	Cotton Growth Unit Lead	Mahyco Private Ltd
Ravinder Kukreti	Product Manager - HDPS	Rasi Seeds (P) Ltd
Rakesh Sharma	MDM – Gujarat (Seed Division)	Rallis India Ltd
National Seed Association of India (NSAI)		
Dr R K Tripathi	Director (Technical)	National Seed Association of India
G. Hari Gopal Krishna	AGM R&D (PC)	Kaveri Seed Co. Ltd.
Samir Wadyalkar	HDPS Trial Co-ordinator	Ankur Seeds Pvt Ltd,
Tarak Dhurjati	(Sr VP)	Nuziveedu seeds Pvt. Ltd.

Details of field staff engaged under the Special Project on Cotton by CITI

Sr No	State Name	District Name	Name of staff	Designation
1	Maharashtra	Nagpur	Mr. Govindrao Haribhau Wairale	Project Coordinator MH (SNO)
2	Maharashtra	Nagpur	Ashish Vijay Bisen	Project Officer Nagpur (DNO)
3	Maharashtra	Wardha	Amit Ashokrao Kawade	Project Officer Wardha (DNO)
5	Maharashtra	Nagpur	Umesh Narayanrao Gawande	Cotton Extension Assistant
6	Maharashtra	Nagpur	Pramod Vishwas Pandhan	Cotton Extension Assistant
7	Maharashtra	Nagpur	Manoj Haribhau Vaidya	Cotton Extension Assistant
8	Maharashtra	Nagpur	Digambar Babarao Gedam	Cotton Extension Assistant
9	Maharashtra	Nagpur	Pawan Kamalakar Junghare	Cotton Extension Assistant
10	Maharashtra	Nagpur	Swikar Yogiraj Meshram	Cotton Extension Assistant
11	Maharashtra	Nagpur	Shankar Sudhakar Dhage	Cotton Extension Assistant

Sr No	State Name	District Name	Name of staff	Designation
12	Maharashtra	Wardha	Prabhakar Shamrao Chambhare	Cotton Extension Assistant
13	Maharashtra	Wardha	Anil Vasudeorao Awathale	Cotton Extension Assistant
14	Maharashtra	Wardha	Sadashiv Govindrao Sharmake	Cotton Extension Assistant
15	Maharashtra	Wardha	Mohan Govindrao Karnake	Cotton Extension Assistant
16	Maharashtra	Wardha	Ravi Rajendra Tiple	Cotton Extension Assistant
17	Maharashtra	Wardha	Artesh Ashokrao Khokle	Cotton Extension Assistant
18	Maharashtra	Wardha	Vishal Vasantrao Gobade	Cotton Extension Assistant
19	Maharashtra	Wardha	Vaibhav Vijay Pohankar	Cotton Extension Assistant
20	Madhya Pradesh	Alirajpur	Anish Chouhan	Project Officer Alirajpur (DNO)
21	Madhya Pradesh	Alirajpur	Bhikansingh Chouhan	Cotton Extension Assistant
22	Madhya Pradesh	Alirajpur	Dinesh Pachaya	Cotton Extension Assistant
23	Madhya Pradesh	Alirajpur	Jogdish Gadriya	Cotton Extension Assistant
24	Madhya Pradesh	Alirajpur	Kamlesh Dawar	Cotton Extension Assistant
25	Madhya Pradesh	Jhabua	Ram bharose singh tomar	Project officer Jhabua(DNO)
26	Madhya Pradesh	Jhabua	Ankit Solanki	Cotton Extension Assistant
27	Madhya Pradesh	Jhabua	Anil Jhaniya	Cotton Extension Assistant
28	Madhya Pradesh	Jhabua	Maya Nalwaya	Cotton Extension Assistant
29	Madhya Pradesh	Jhabua	Madhu Bariya	Cotton Extension Assistant
30	Madhya Pradesh	Jhabua	Jagdish Chandra Sencha	Cotton Extension Assistant
31	Madhya Pradesh	Jhabua	Mehtabsingh Mori	Cotton Extension Assistant
32	Madhya Pradesh	Jhabua	Mukesh Vasuniya	Cotton Extension Assistant
33	Madhya Pradesh	Dhar	Mohit Chouhan	Project officer Dhar(DNO)
34	Madhya Pradesh	Dhar	Kalusingh Chochan	Cotton Extension Assistant
35	Madhya Pradesh	Dhar	Rahul Bhagel	Cotton Extension Assistant
36	Madhya Pradesh	Dhar	Dinesh Chouhan	Cotton Extension Assistant
37	Madhya Pradesh	Dhar	Ramesh Solanki	Cotton Extension Assistant
38	Madhya Pradesh	Ratlam	Rakesh Patidar	Project Officer Ratlam(DNO)
39	Madhya Pradesh	Ratlam	Gajendra Singh Chouhan	Cotton Extension Assistant
40	Madhya Pradesh	Ratlam	Shankar Singh Maida	Cotton Extension Assistant
41	Madhya Pradesh	Ratlam	Rajendra Damar	Cotton Extension Assistant
42	Madhya Pradesh	Ratlam	Devilal Kharadi	Cotton Extension Assistant
43	Madhya Pradesh	Ratlam	Balaram Charpota	Cotton Extension Assistant
44	Madhya Pradesh	Dhar	Sanjay Mahav	Cotton Extension Assistant
45	Rajasthan	Banswara	Tahjing Katara	Cotton Extension Assistant
46	Rajasthan	Bhilwara	P.N. Sharma	Project Coordinator Rajasthan (SNO)

Sr No	State Name	District Name	Name of staff	Designation
47	Rajasthan	Bhilwara	Bharat Kumar Sharma	Project Officer (DNO)
48	Rajasthan	Bhilwara	Mangi Lal	Cotton Extension Assistant
49	Rajasthan	Bhilwara	Shambhu Lal	Cotton Extension Assistant
50	Rajasthan	Bhilwara	Narayan Lal	Cotton Extension Assistant
51	Rajasthan	Bhilwara	Salim Mohmmad	Cotton Extension Assistant
52	Rajasthan	Bhilwara	Alam Din	Cotton Extension Assistant
53	Rajasthan	Bhilwara	Ram Chandra	Cotton Extension Assistant
54	Rajasthan	Bhilwara	Asha Ram Gadri	Cotton Extension Assistant
55	Rajasthan	Rajsamand	Prem Shankar	Cotton Extension Assistant
56	Rajasthan	Chittorgarh	Ram Lal	Cotton Extension Assistant
57	Rajasthan	Chittorgarh	Rameshwar Lal	Cotton Extension Assistant

Details of field staff engaged under the Special Project on Cotton by SIMA

State Name	District Name	Name of staff	Designation
Karnataka	Raichur	K Madhubahu	Scientific Officer
Tamil Nadu	Coimbatore	J Arogyasamy	Jr Scientific Officer
	Tirupur	J Arogyasamy	Jr Scientific Officer
	Salem	M M Palanisamy	Sr Scientific Officer
	Dharmapuri	M M Palanisamy	Sr Scientific Officer
	Namakkal	M Parthiban	Scientific Officer
	Erode	M Parthiban	Scientific Officer
	Madurai	T Poochiappan	Research Assistant
	Virudhunagar	T Poochiappan	Research Assistant
	Perambalur	G Munusamy	Jr Officer

List of district wise project team of KVKs/DATTCC

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
Tamil Nadu	Coimbatore	Dr. S. Suresh Kumar	Mrs. S.Sindhuja	YP - II
			Mr. S.Duraisamy	YP - I
Tamil Nadu	Namakkal	Dr. S. Alagudurai SMS, Agronomy	VEERASIVA.G	YP - II
			BHARATHI.K	YP - I
Tamilnadu	Salem	Dr.R.Jagathambal, Programme Coordinator	A.Sankar	YP-II
			M.Pooja	YP-I
Tamil Nadu	Erode	Mr. R. D. Srinivasan, Scientist (Plant Protection)	Mr. R. Thangadurai	YP - II
			Ms. R. K. Ramprabha	YP - I
Karnataka	Yadgir	Dr. Jaiprakash Naraayan R. P. (Senior Scientist & Head)	Dr Shruti Koraddi	YP-II
			Dr Eramma	YP-I
Karnataka	Raichur	Dr. SN Bhat, Scientist (soil Science)	Dr. Umesh Babu B S	YP-I
			Dr. Sangeeta	YP-II
Karnataka	Dharwad	Dr. U. K. Shanwad Scientist (Agronomy)	Dr. Pooja Kathare	YP-I
			Dr. Madhumati S Pujeri	YP-II
Gujarat	Rajkot	Dr.J.H.Chaudhary Scientist (Agronomy)	Berani Arvind Limbabbhai	YP-I
			Tank Payal Rajeshbbhai	YP-II
Gujarat	Amreli	Dr. P. J. Prajapati (Scientist Agronomy)	Mori Vaishali Kalusinh	YP-II
			Gajera Paraskumar Devendrabbhai	YP-I
Gujarat	Surendranagar	Dr. B.C. Bochalya (Scientist-Extension Education)	Makvana Ajaybbhai karmashibhai	YP-I
			Chothani Nachiket Trikambhai	YP-II
Teangana	Nalgonda	Dr. K Chandra Shaker	Banothu Chakravarthi	YP-II
			Avuta Saipriya	YP-I
			Gunti Swathi	YP-I
			J Veerabadrudu	YP-I
			Methuku Karthik Reddy	YP-I
			Thandu Vijaya Vardhan	YP-I
			Padma Susheela	YP-I

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
			Pagidal Venkata Dinesh Kumar Reddy	YP-I
Telangana	Karimnagar	J Vijay, SMS (Crop Production)	Rachapalli Rajesh	YP-II
			Potharaju Rajesh	YP-I
Telangana	Siddipet	Ravi Palthiya, SMS (Plant Protection)	K. Santhosh	YP-II
			P. Saidulu	YP-I
			Ch. Vanitha	YP-I
			M. Anil kumar	YP-I
			V. Pooja	YP-I
Telangana	Jangaon (DATTC)	Dr. B. Anil Kumar	Maddela Venu	YP-II
			Gudipelly Niharika	YP-I
			Bandi Sumalatha	YP-I
Telangana	Mancherial	Dr.I.Thirupathi, SMS (Crop Production)	Dr. Elumle Priyanka	YP-II
			Sri. Badugu Bharath Prakash	YP-I
Telangana	Vikarabad (DATTC)	Sri. T. Laxman	Bommena Madhu	YP-I
			Dr. B. Venkatesh	YP-II
			P. Srikanth	YP-I
Telangana	Khammam	Dr.K.Ravi Kumar, SMS (Plant Protection)	Marthi Mukesh	YP-II
			Depangi Srinivas	YP-I
			Pasala Yugandhar	YP-I
Telangana	Nagarkurnool	Dr .O. Shaila, SMS (Plant Protection)	R.Raghuvaran Singh	YP-II
			M.Rajeshkumar	YP-I
			B.Harish	YP-I

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
			P.Venketesh	YP-I
			V.Pushpalatha	YP-I
			R.Gouthami	YP-I
Telangana	Suryapet	Shri.D.Naresh,SMS (Agronomy)	N. Vikram	YP-II
			G. Santhosh	YP-I
			P. Mounika	YP-I
Telangana	Adilabad	DR SN. Malleswari Sadhineni, Program Coordinator	Retineni Dileep	YP-II
			Endurwar Saikiran	YP-I
			Esthari Mallesh	YP-I
Telangana	Mahabubabad	Dr.N.Kishorekumar, SMS(Extension)	J. Sai kiran	YP-II
			G. Bhavani	YP-I

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
Telangana	Warangal	Dr.Ch.Sowmya,SMS (Agronomy)	ReguriHarshaVardhan Reddy	YP-1
			Azmera Suresh	YP-I
			Kampa Rajesh	YP-II
Telangana	Sangareddy (DATTC)	Ms. K. Sarita	J. Rajashekar	YP - II
			P.Tirumala srikanth	YP-I
Telangana	Rangareddy	Dr S Vijaya Kumar,	L Harika Reddy	YP-II
			J Sudharshan Reddy	YP-I
Andhra Pradesh	Ananthapuram u	DR SN. Malleswari Sadhineni, Program Coordinator	Udayagiri Siva kumar	YP-II
			M. Sai kumar	YP-I
Andhra Pradesh	Palnadu	Dr.T.Venkateswara Reddy, SMS(Crop Production),	K.Bhavya Sri	YP-II
			D.Chandrika	YP-I
			S.Ravi Kiran	YP-I
			M.Venkateswarlu Naik	YP-I
			V.Barma Naik	YP-I
Andhra Pradesh	Kurnool	Dr.N.Ramesh Naik, SMS (Plant Protection)	T.Vishnu Vardhan Reddy	YP-II
			P.Ravindra	YP-I
Andhra Pradesh	Nandyal	E. Ravi Goud, SMS (Extension)	S. Srikanth	YP-II
			I. Bhargav Kumar Yadav	YP-I
Andhra Pradesh	NTR	Dr.N.Rajasekhar, SMS (Plant Protection)	GONA SHOBHITHA RANI	YP-II
			YALAMANDALA SAI GOPI	YP-I
Andhra Pradesh	Guntur	Dr. Gangadevi, Scientist(Crop Production)	J Srilatha	YP-II
			K Nagalakshmi	YP-I
			Karu Ebi	YP-I
			Palle Sravanthi	YP-I
Maharashtra	Wardha	Dr. Jivan Katore (Senior Scientist & Head)	Prabodh P. Pate	YP-II
			Sumit U. Mhasal	YP-I
			Manish M.Sawale	YP-I
Maharashtra	Buldana	Mr. Anil T. Gabhane (SMS plant protection)	Pratik GajananNagpure	YP-II
			SagarVasantraoPatil	YP-I
			SachinGajananNavkar	YP-I
Maharashtra	Amravati	D. H. V. Thakur (SMS Agronomy)	Mr. Akshay R. Ganeshpure	YP-II
			Mr. Mahendra R. Sengar	YP-I

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
			Miss. M. S. Pinjarkar	YP-I
			Mr. R. D. Shinde	YP-I
Maharashtra	Nanded	Dr. Krishna Ganapatrao Ambhure (SMS - Plant Protection)	PrabhudasGangaprasadUdte war	YP-II
			BalajiSambhajiChandapure	YP-I
Maharashtra	Nandurbar	Shri P. C. Kunde (SMS- Plant Protection)	Shri. Sandip Ramesh Waghmare	YP-II
			Shri. Sandip Devsing Kuwar	YP-I
Maharashtra	Parbhani	Mr. Amit A. Tupe (SMS Horticulture)	Dr. Usha Vaijanath Satpute	YP-II
			Mr. Kundlik Vinayakrao Khupse	YP-I
			Mr. Namdev Laxmanrao Kale	YP-I
			Mr. Vikas Vitthalrao Khobe	YP-I
Maharashtra	Washim	Tushar S Deshmukh (SMS Agronomy)	Akshaykumar A Giri	YP-II
			Shivaji R. Wagh	YP-I
			Aditya D Deshmukh	YP-I
Maharashtra	Beed	Mr. Krushna Kardile (SMS Agronomy)	Pokale Suraj Shriram	YP-II
			Chintale Yallaling Sanjay	YP-I
Maharashtra	Yavatmal	Dr. S. U. Nemade (Senior Scientist & Head)	Shivani Dilip Bawankar	YP-II
			Ravindra Rathod	YP-I
			Nayan Prabhakarrao Thakre	YP-I
			Prachi Bhaurao Nagose	YP-I
Maharashtra	Akola	Mr. Kuldeep M Deshmukh (SMS Agronomy)	Anand Pachre	YP-II
			RajeshwarRaut	YP-I
			Mahesh Ingle	YP-I
			AbhileshChatarkar	YP-I
			RutujaKhandre	YP-I

State Name	District Name	Nodal Officer (Name & Designation)	Name of staff	Designation (YP-I / YP-II)
			Keshav Chatarkar	YP-I
			Gopesh Gawande	YP-I
			Abhijeet Thakare	YP-I
Maharashtra	Chandrapur	Dr. Vijay N. Sidam (SMS Extension Education)	Kailas Sampat Kamdi	YP-I
			Parag Shankar Sahare	YP-II
Maharashtra	Dhule	Shri. Jagdish Kathepuri (SMS Agronomy)	Mr. Kunal Dyaneshwar Rajale	YP-II
			Mr. Jivan Dagadu Rane	YP-I
Maharashtra	Jalna	Dr. S. D. Somvanshi (Sr. Scientist)	Dake Ajit Parmeshwar	YP-II
			Bansode Abhilash Sudhakar Rao	YP-I
Maharashtra	Aurangabad	Dr. Kishor K. Zade (SMS Agronomy, In charge Sr. Scientist & Head)	Mr. Kadam S. P	YP-II
			Mr. Singal J. P.	YP-I
Maharashtra	Jalgaon	Dr. Sharad Jadhav	Mrs. Mayuri Anup Deshmukh	YP-II
			Mr. Ashish Rajendra Pawar	YP-I



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