

Executive Summary

Summary of the demonstrations conducted under FLD cotton during 2017-18 FLD Farmers' Profile

During the year 2017-18, Front Line Demonstrations were conducted nine states in three cotton growing zones by 15 centers of ICAR - AICRP on cotton. These demonstrations were conducted on ICM in cotton, desi / ELS cotton and seed production of ELS cotton and intercropping in cotton. In accordance with the decision of Government of India (GOI) regarding implementation of Special Component Plan (SCP) for Scheduled Caste and Tribal Sub Plan (TSP) for Scheduled Tribes and Gender Budgeting, the beneficiaries were selected for the year's front line demonstration programme. The details of farmers benefited out of the SCP, TSP and gender budgeting are given in table 4.

Table 4 – Details of farmers benefited out of SCP, TSP and Gender budgeting of Cotton FLDs conducted by ICAR - AICRP on Cotton under NFSM / FLD during 2017-18

S. No	Name of the centre	FLDs on ICM					FLDs on Desi/ELS cotton					FLDs on Intercropping				
		SC/ST	OBC	Gen	W	TOT	SC/ST	OBC	Gen	W	TOT	SC/ST	OBC	Gen	W	TOT
1.	PAU, Faridkot	7	16	42	1	66	7	10	36	7	60	-	-	-	-	-
2.	CCSHAU, Hisar	10	-	33	7	50	5	3	32	10	50	-	-	-	-	-
3.	CICR, Sirsa	22	33	245	-	300	-	-	-	-	-	-	-	-	-	-
4.	SKRAU, Sriganganagar	20	25	5	-	50	13	36	1	-	50	-	-	-	-	-
5.	NAU, Surat	10	16	22	2	50	23	1	22	4	50	35	-	-	15	50
6.	JAU, Junagadh	-	2	28	2	32	-	-	-	-	-	-	2	16	2	20
7.	PDKV, Akola	-	-	15	-	15	-	-	-	-	-	-	-	5	-	5
8.	MAU, Nanded	36	6	8	-	50	2	9	10	6	27	22	10	16	2	50
9.	MPKV, Rahuri	14	7	29	-	50	-	-	-	-	-	9	6	35	-	50
10.	UAS, Dharwad	02	-	22	6	30	2	-	17	1	20	5	-	12	3	20
11.	UAS, Raichur	11	-	15	4	30	-	-	-	-	-	-	-	-	-	-
12.	UAS, Chamrajnagar	-	-	145	-	145	-	-	-	-	-	-	-	-	-	-
13.	TNAU, Coimbatore	3	14	3	-	20	1	18	-	1	20	1	18	-	1	20
14.	CICR, Coimbatore	6	34	2	8	50	6	35	3	6	50	-	-	-	-	-
15.	ANGRAU, Guntur	6	-	11	-	17	-	-	-	-	-	2	6	8	-	16
	Total	147	153	625	30	955	59	112	121	35	327	74	42	87	28	231

Altogether, 1513 farmers participated in demonstrations conducted in an area of 740 hectares. In the demonstrations on ICM on cotton 955 farmers were directly benefited as demonstrators in an area of 432 hectares, whereas in demonstrations on Desi/ELS cotton 327 farmers were benefited as demonstrators in an area of 170 hectares and 231 farmers were benefited by demonstrations on intercropping in cotton in an area of 138 hectares. A total of 280 SC/ST farmers, 307 OBC farmers and 93 farmwomen were benefited out of this program during the year 2017-18.

Technologies Demonstrated under FLD

During the reported year, under National Food Security Mission (Commercial Crops), 432 Front Line Demonstrations on Integrated Crop Management on cotton, 170 Front Line Demonstrations on Desi / ELS cotton / ELS cotton seed production and 138 Front Line Demonstrations on intercropping with cotton were conducted. The various technologies demonstrated were high yielding varieties and hybrids suitable for various agro-climatic conditions, Integrated Nutrient Management, Integrated Pest Management, use of Bio-fertilizers, Bio-pesticides, water management practices, improved agronomic practices and intercropping.

Table 5 Details on the Technologies Demonstrated by the centers of ICAR - AICRP on Cotton under NFSM / FLD during 2017-18

North Zone

PAU, Faridkot	:	ICM (30 ha): Time of sowing, Optimal plant population, Balanced nutrition and Weed management in F 2228 and LH 2108. Desi / ELS cotton/ Seed production (30 ha) : Popularization of desi cotton LD 949 and FDK 124
CCSHAU, Hisar	:	ICM (20 ha): Yield maximization of Bt cotton hybrids with improved technology i.e. INM, IPM and Soil and water management Improved Agronomic practices Desi / ELS cotton/ Seed production (20 ha) : popularize high yielding and non shedding desi cotton varieties, minimize the infestation of whitefly, minimize the insecticidal sprays, minimize the inoculums of CLCuD, Development and identification of suitable varieties for the cotton-wheat cropping system
ICAR-CICR, Sirsa	:	ICM (120 ha) : Newly developed <i>G.hirsutum</i> varieties CSH-3129 in normal spacing of 67 x 30 cm and CSH-3075 in dense population of 67.5 x 10 cm spacing
SKRAU, Sriganganagar	:	ICM (20 ha) : Full package of practices for <i>G. hirsutum</i> hybrids Desi / ELS cotton/ Seed production (20 ha) : Full package of practices for <i>G. arboreum</i> varieties

Central Zone

<p>NAU, Surat</p>	<p>: ICM (20 ha): Integrated nutrient management through organic source (City compost) and Bio fertilizer (Culture of Azetobacter, Phosphorous Solubilizing Bacteria, Potash Mobilizing Bacteria), IPM for sucking pest management through Flonicamid 50 WG in initial crop window for natural enemies conservation and pink bollworm monitoring through pheromone trap with PBW lure and management at critical stage on public sector released G. Cot. Hy. 8 BG II</p> <p>Desi / ELS cotton/ Seed production (20 ha): Seed production of GN. Cot. 25 (<i>G. herbaceum</i>) allotted in rain fed pockets of Jambusar Taluka of Bharuch district (Traditional/ conventional area of desi cotton).</p> <p>Intercropping in Cotton (20 ha): With the normal cultivation of commercial Bt hybrid G.Cot.Hy. 8 (BG II) and the promising pulse crop variety of Green gram (GAM-5) as intercrop in Bt hybrid G.Cot.Hy. 8 (BG II)</p>
<p>JAU, Junagadh</p>	<p>: ICM (20 ha): ICM strategies for popular cotton cultivars</p> <p>Intercropping in Cotton (20 ha): Cotton + Blackgram, green , Sesame, Ground nut</p>
<p>PDKV, Akola</p>	<p>: ICM (15 ha) : Cotton crop under HDPS with 1.66 lakh/ha with moisture conservation technique (Furrow opened at 40 DAS) and spraying of 2% urea at flowering and 2 % DAP at BDS in <i>hirsutum</i> variety AKH 081.</p> <p>Intercropping in Cotton (5 ha): Intercropping of pigeonpea in cotton with 6:1 or 8:1 row proportions.</p>
<p>MAU, Nanded</p>	<p>: ICM (20 ha) : Optimum plant population (18518 plants / ha – Spacing 120 x 45 cm under rainfed), Recommended Dose of Fertilizer (120:60:60 NPK kg / ha), Foliar 2% Urea, DAP & KNO₃, Spray of 0.2% MgSO₄</p> <p>Desi / ELS cotton/ Seed production (20 ha): Improved varieties viz. PA 08 and PA 528</p> <p>Intercropping in Cotton (20 ha) : Cotton + Green gram (1:2 or 1:1), Cotton + Black gram (1:1)</p>
<p>MPKV, Rahuri</p>	<p>: ICM (20 ha) : Optimum plant population (12345 plant /ha), Recommended Dose of Fertilizer (125:65:65 kg/ha NPK), Foliar spray of 2% Urea and DAP</p> <p>Intercropping in Cotton (20 ha): Intercropping with blackgram, soybean, pigeonpea, greengram, and groundnut.</p>

South Zone

<p>UAS, Dharwad</p>	<p>: ICM (30 ha): Integrated Crop Management in Bt cotton v/s Farmers practice</p> <p>Desi / ELS cotton/ Seed production (20 ha):</p> <p>A. Newly developed desi cotton genotypes (DDHC-11 v/s Present variety Jayadhar)</p> <p>B. Newly developed <i>Intra Hirsutum</i> Non Bt cotton Hybrids (DHH-263 v/s DHH-11)</p> <p>C. Newly developed <i>Hirsutum</i> variety : ARBH-813 v/s Sahana</p> <p>Intercropping in Cotton (20 ha): Remunerative intercropping systems in Bt cotton v/s Sole Bt cotton</p>
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UAS, Raichur	:	ICM (30 ha) : Technologies on foliar sprays of 19:19:19, MgSO ₄ , and Bio-20 (Mixture of both macro and micro nutrients) and spraying of Fipronil against jassids and Lamda Cyalothrin against pink boll worm and usage of Planofix to reduce the boll drop
UAS, Chamrajnagar	:	ICM (30 ha) : Integrated Crop management practices for major cotton cultivars viz., MRC-7351, Bahubali, Minerva and Namdari.
TNAU, Coimbatore	:	ICM (20 ha) : Ridge formation and sowing of the cotton seeds in the ridges and furrows, pre-emergence herbicide application, recommended fertilizer dose application, growing of refugee crop, split application of inorganic fertilizer, micronutrient application, biocontrol agent's application, intercultural operation with junior hoe and power tiller and foliar nutrition with cotton plus and water-soluble fertilizer. Desi / ELS cotton/ Seed production (20 ha) : ELS cotton variety Co-14 and Desi cotton variety K 12. Intercropping in Cotton (20 ha) : Cotton varieties SVPR 2, SVPR 5 and TCH 1819 intercropped with black gram and green gram
ICAR-CICR, Coimbatore	:	ICM (20 ha) : Integrated crop management techniques for cotton variety Suraj and popular Bt cotton hybrids. Desi / ELS cotton/ Seed production (20 ha) : Cototn variety Surabhi under summer irrigated condition with integrated crop management practices
ANGRAU, Guntur	:	ICM (17 ha) : Best management practices Intercropping in Cotton (13 ha) : Cotton + Redgram(4:2)

Yield Details of the FLDs Demonstrated

In all the centers, the FLDs could obtain more yield than the farmers' practices of their respective areas (Table 6). At Punjab, the FLDs on ICM could obtain an average seed cotton yield of 2029 kg/ha as against the farmers' practices (1805 kg/ha). Similarly in the demonstrations on Desi cotton, an increase of 9.41 percent was obtained in Punjab. In Haryana, the average seed cotton yield obtained in FLDs on ICM was 1918 kg/ha as against 1771 kg/ha (farmers' practice). In Rajasthan, the average seed cotton yield in FLDs was 3091 kg/ha under ICM demonstrations as against the average yield of the farmers' regular practices (2753 kg/ha) and 2424 kg/ha under Desi cotton in FLDs as against the farmers' practice (2080 kg/ha). In Gujarat, the FLDs conducted by the NAU centre yielded an average seed cotton yield of 1580 kg/ha in ICM, 842 kg/ha seed and 538 kg/ha as lint in seed production and 1801 kg/ha in intercropping with an addition of 261 kg/ha intercrop yield.

Table 6 – Centre wise Average yield of NFSM - FLDs conducted by ICAR - AICRP on Cotton during 2017- 18 in Comparison to Farmers’ practices

S. No	Name of the centre	ICM Average Yield (Kg/ha)		Desi/ELS Cotton Average Yield (Kg/ha)		Intercropping in cotton Average Yield (Kg/ha)		
		FLD Practice	Farmer’s practice	FLD Practice	Farmer’s practice	FLD Cotton	FLD Intercrop	Farmer’s practice
1.	PAU, Faridkot	2029	1805	2243	2050	-	-	-
2.	CCSHAU, Hisar	2150	1940	1858	1686	-	-	-
3.	CICR, Sirsa	1686	1602	-	-	-	-	-
4.	SKRAU, Sriganganagar	3091	2753	2424	2080	-	-	-
5.	NAU, Surat	1580	1519	842 (Seed) 538 (lint)		1801	261	1708
6.	JAU, Junagadh	2721	2506	-	-	2556	572	2181
7.	PDKV, Akola	1202	1160	-	-	636	395	1134
8.	MAU, Nanded	1275	1122	938	1047	1402	293	1628
9.	MPKV, Rahuri	1769	1538	-	-	1598	757	1391
10.	UAS, Dharwad	2084	1895	742	638	1550	854	1647
11.	UAS, Raichur	2753	2419	-	-	-	-	-
12.	UAS Chamrajnagar	1107	944	-	-	-	-	-
13.	TNAU, Coimbatore	2355	1911	1895	1338	2013	280	1775
14.	CICR, Coimbatore	**	**	**	**	-	-	-
15.	ANGRAU, Guntur	2547	2203	-	-	1775	378	1869

** Under summer irrigated condition – yet to get yield data

The FLDs conducted by Junagadh centre yielded an average seed cotton yield of 2721 kg/ha in ICM and 25056 kg/ha in intercropping with an addition of 572 kg/ha intercrop yield. An average seed cotton yield of 1202 kg/ha in FLDs on ICM at Akola in Maharashtra. The demonstrations on intercropping in cotton gave an additional intercrop yield of 395 kg/ha. The Nanded and Rahuri centres in Maharashtra could obtain an average seed cotton yield of 1275 kg/ha and 1769 kg/ha respectively in FLDs on ICM. An average seed cotton yield of 2084 kg/ha, 2753 kg/ha and 1107 kg/ha was obtained respectively by Dharwad, Raichur and Chamrajnagar centres in Karnataka. In Tamil Nadu, the FLDs conducted by TNAU on ICM could obtain an

average seed cotton yield of 2355 kg/ ha. The FLDs conducted by ANGRAU, Guntur yielded an average of 2547 kg/ha under FLDs on ICM and 1775 kg/ha + 378 kg/ha (intercrop yield) under FLDs on cotton + intercrops.

Extension Activities

The centers had conducted various extension activities to popularize the cotton production technologies among the cotton growers (Table 7). A total of **231** visits by the Scientists, **71** farmers' meetings, **23** field days and **56** awareness programs were conducted by the centres during the year 2017-18. In addition, some centres disseminated the cotton technological information through radio talks, TV talks, newspaper clippings and voice SMS.

Table 7 - Details of Extension Activities Conducted by the Centers of ICAR - AICRP on cotton under NFSM / FLD during 2017-18

S. No	Name of the Centre	Extension Programme					
		Scientists' visit	Farmers meeting	Field days	Awareness program / Kissan mela	News Paper / Radio / Video coverage	Others
1	PAU, Faridkot	68	16	5	6 (1,72,000 farmers)	22	2 (district level campaigns)
2	CCSHAU, Hisar	10	10	2	2	10	-
3	CICR, Sirsa	18	3	2	4	2 bulletins + 2 Video Recordings	-
4	SKRAU, Sriganganagar	-	-	2	-	-	-
5	NAU, Surat	10	4	-	4	-	-
6	JAU, Junagadh	7	4	5	3	3	-
7	PDKV, Akola	5	-	1	10	4	2 (trg CAIM)
8	MAU, Nanded	7	3	1	1	-	-
9	MPKV, Rahuri	15	5	-	-	-	-
10	UAS, Dharwad	25	12	1	11	25	-
11	UAS, Raichur	5	5	2	5	2	-
12	UAS Chamrajnagar	25	-	1	5	-	-
13	TNAU, Coimbatore	35	8	1	4	-	-
14	CICR, Coimbatore	1	1	-	1	-	-
15	ANGRAU, Guntur	-	-	-	-	26	-
	TOTAL	231	71	23	56	96	4