Annual Progress Report: 2017-18

5. Frontline demonstrations

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5. Frontline demonstrations

Executive summary

During *Kharif 2017-18*, 331 frontline demonstrations (FLDs) on small millets were organized across country *viz.*, Andhra Pradesh, Chattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and Uttarakhand on farmer's fields. Latest varieties of small millets were demonstrated along with locally cultivar as a check in farmers' fields at different locations. The demonstrated varieties of finger millet, foxtail millet, kodo millet, little millet, barnyard millet and proso millet gave 54.83%, 60.43%, 47.29%, 57.07%, 67.08%, 71.59%, 74.28%, 44.96%, 106.76%, 80.61%, 154.32% and 107.33% higher grain and fodder yields respectively than the local checks.

Detailed report

Introduction

The experience gained in many other commercial crops have shown that the Front Line Demonstrations (FLD's) have often been very effective by convincingly showing farmers the importance and the potential of improved technology in enhancing yields. The conduct of well laid out FLD's with the ultimate aim of demonstrating the visual impact of yield enhancement, calls for meticulous planning and continuous contact with farmers. As farmers are not aware of the improved technologies and their potentials; there is need to educate them to upgrade their skills. The purpose of Front Line Demonstrations was to demonstrate the full potential available in the recommended package. So, it was necessary to provide all key inputs (Seed of HYV's, suitable to the region and recommended dose of manures free of cost to the cultivator).

Prior to the commencement of crop season, a meeting was held at the respective villages to enlighten farmers about the objectives and the purpose behind these demonstrations. This helped in establishing good rapport between farmers and scientist and also in assessing the socio - economic conditions, besides existing level of adoption of technologies and receptivity of farmers to modern technologies etc. These demonstrations are organized under the direct guidance of a team of scientists who have generated the technology. There is an opportunity to show the full potential of the technology package and FLD's serves as a very effective medium for educating farmers as well as for training of field extension functionaries. Realizing this, the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India and the Indian Council of Agricultural Research, jointly initiated the conduct of Front Line Demonstrations (FLD's) under the aegis of All India Coordinated Research project on Small Millets (AICRP on Small Millets). Keeping these in view, FLDs on Small millets were organized during *Khari* 2017-18 at different locations of the country.

Implementation of frontline demonstrations during 2017-18

Front Line Demonstrations were conducted during 2017 in the states of Andhra Pradesh, Karnataka, Tamil Nadu, Chattisgarh, Jharkhand, Maharashtra, Madhya Pradesh, Uttarakhand and Gujarat on farmer's fields. The total area under Front Line Demonstrations was 330.6 ha of which 139.1 ha was in finger millet, 46 ha in kodo millet, 39.8 ha in foxtail millet, 83.2 ha in little millet, 17.5 ha in barnyard millet and 5 ha in proso millet. Both centre and crop wise breakup of Front Line Demonstrations conducted during the period is provided in Table1 and state and crop wise breakup of FLD farmers were presented in Table 2. The cooperative and well responsive farmers from different categories were selected from the villages of each site. The detailed technical programme organized during 2017-18 is given here under.

Table 1: Centre and crop wise breakup of area covered (hectares) under FLDs during 2017-18

S. NO.	Center	FM	FTM	LM	KM	PM	BM	Total Area. ha
1	P.C. unit	19.6	4.8	4.8	-	-	-	29.2
2	VPKAS Almora	8.8	-	-	-	-	2.5	11.3
3	Mandya	12.9	-	-	-	-	-	12.9
4	Hagari	-	10	-	-	-	-	10
5	Nandyal	-	20	-	-	-	-	20
6	Vizianagaram	10	-	10	-	-	-	20
7	Jagdalpur	15	-	13	10	-	-	38
8	Athiyandal	5	5	5	5	5	5	30
9	Ranichauri	10	-	-	-	-	10	20
10	Dindori	-	-	15	16	-	-	31
11	Rewa	-	-	5.4	15	-	-	20.4
12	Kolhapur	15	-	5	-	-	-	20
13	Ranchi	17.80	-	-	-	-	-	17.8
14	Waghai	25	-	25	-	-	-	50
	Total	139.1	39.8	83.2	46	5	17.5	330.6

Table 2: Centre and crop wise breakup of farmers covered (hectares) under FLDs during 2017-18

S. NO.	Center	Finger millet	Foxtail millet	Little millet	Kodo millet	Proso millet	Barnyard millet	Total No of farmers
1	P.C. unit	49	12	12	-	-	-	73
2	VPKAS Almora	202	-	-	-	-	35	237
3	Mandya	18	-	-	-	-	-	18
4	Hagari	-	25	-	-	-	-	25
5	Nandyal	-	30	-	-	-	-	30
6	Vizianagaram	15	-	10	-	-	-	25
7	Jagdalpur	23	-	10	12	-	-	45
8	Athiyandal	9	16	10	8	10	12	65
9	Ranichauri	130	-	-	-	-	151	281

10	Dindori	-	-	25	31	-	-	56
11	Rewa	-	-	25	76	-	-	101
12	Kolhapur	75	-	25	-	-	-	100
13	Ranchi	41	-	-	-	-	-	41
14	Waghai	100	-	100	-	-	-	200
	Total	662	83	217	127	10	198	1297

The total number of farmers involved was 1297 (Table 2). Number of front line demonstrations conducted in small millets in different states (Table 3) indicated that there were 662 farmers involved in finger millet demonstrations during 2017 across the country followed by proso millet (10), Kodo millet (127), foxtail millet (83), little millet (217), and barnyard millet (198). The main purpose of this activity was to demonstrate the yield potential that could be attained by adopting the improved cultivation practices.

Table 3: State and crop wise breakup of area covered (hectares) under FLDs during 2017-18

State	Finger millet	Foxtail millet	Little millet	Kodo millet	Proso millet	Barnyard millet	Total area (ha)
Karnataka	32.5	14.8	4.8	-	-	-	52.1
Uttarakhand	18.8	-	-	-	-	12.5	31.3
Andhra Pradesh	10	20	10	-	-	-	40
Madhya Pradesh	-	-	20.4	31	-	-	51.4
Tamil Nadu	5	5	5	5	5	5	30
Maharashtra	15	-	5	-	-	-	20
Chattisgarh	15	-	13	10	-	-	38
Jharkhand	17.8	-	-	-	-	-	17.8
Gujarat	25	-	25	-	-	-	50
Total area (ha)	139.1	39.8	83.2	46	5	17.5	330.6

Table 4: State and crop wise breakup of farmers covered (hectares) under FLDs during 2017-18

State	Finger millet	Foxtail millet	Little millet	Kodo millet	Proso millet	Barnyard millet	Total no. farmers
Karnataka	67	37	12	-	-	-	116
Uttarakhand	332	-	-	-	-	186	518
Andhra Pradesh	15	30	10	-	-	-	55
Madhya Pradesh	-	-	50	107	-	-	157
Tamil Nadu	9	16	10	8	10	12	65
Maharashtra	75	-	25	-	-	-	100
Chattisgarh	23	-	10	12	-	-	45
Jharkhand	41	-	-	-	-	-	41
Gujarat	100	-	100	-	-	-	200

Total	662	83	217	127	10	198	1297

Demonstrated small millet cultivars and improved package of practices

Most of the demonstrations were conducted by adopting the whole package for latest national and state released small millet were demonstrated and compared with locally popular varieties as a check (LC). The state wise technologies demonstrated under the FLDs during *kharif* 2017-18 are given in Table 5.

Table 5: Improved varieties demonstrated under FLDs

State	Finger millet	Foxtail millet	Little millet	Kodo millet	Proso millet	Barnyard millet
Karnataka	GPU-67, KMR 301, KMR 340, KMR 204	SiA 2644, Suryanandi	OLM-203	-	-	-
Uttarakhand	VL Mandua 352, VL Mandua 324, PRM-2	-	-	-	-	VL Madira 172, PRJ-1
Andhra Pradesh	VR-847	SiA 3156, SiA 3085, Suryanandi	OLM-203	-	-	-
Madhya Pradesh	-	-	JK 8, JK 4, JK 36	JK439, JK 155, JK 137, RK 390-25	-	-
Tamil Nadu	CO(Ra) 15	CO(Te)7	CO (Sa) 4	CO 3	CO(PV)5	CO (KV)2
Maharashtra	Phule Nachani (KOPN 235)	-	Phule Ekadashi (KOPLM 83)	-	-	-
Chattisgarh	CG Ragi-2	-	CG Kutki-1	CG Kodo-1	-	-
Jharkhand	A404, BBM 10	-	-	-	-	-
Gujarat	GN-4, GN-5, GNN-6, GNN-7	-	GV-2 and GNV-3	-	-	-

Results

Grain, Fodder yields and economics of small millet cultivation

The results indicated (Table 6, 7, 8,9,10 and 11) that (on mean location basis)

1. The demonstrated varieties of finger millet under FLDs yielded (54.83 per cent increase) grains and 60.42 per cent more fodder than the local check. In results, an incremental benefit-cost (B: C) ratio of 2.02 was obtained from them compared to the local check.

2. The data on grain and fodder yields obtained from demonstrated varieties of Foxtail millet under FLDs which were organized by Athiyandal, Hagari, Bengaluru and Nandyal indicated that yielded 47.28 per cent more grains and 57.07 per cent more fodder with B: C ratio of 2.37 compared to the local varieties.
3. Demonstrated varieties of Kodo millet performed better in terms of grain (67.07 %) and fodder yield (71.59 %) under FLD which were more B: C ratio (2.15) compared to farmers practice.
4. The data on grain and fodder yields of little millet obtained from demonstrated varieties under FLDs yielded 74.28 per cent more grains and 44.95% more fodder yield than the checks. It shows that the demonstrated varieties were also good as per the fodder yield is concerned compared to the local varieties.
5. Performance of demonstrated varieties of Barnyard millet in the Athiyandal, Almora and Ranichauri was found better and gave 106.76 per cent higher grain and 80.61 per cent fodder yield than the local check.
6. In Athiyandal area of Tamilnadu, CO 5 variety of Proso millet performed better and gave 154.32 per cent higher grain and 107.33 per cent fodder yield than the local check.

Impact of the frontline demonstrations

The results revealed (Table 6, 7, 8,9,10 and 11) that the grain yield of finger millet (1461 kg/ha), foxtail millet (1161 kg/ha), kodo millet (814 kg/ha), little millet (693), barnyard millet (784) and proso millet (753) was lower under local practice as compared to FLDs (2262, 1710, 1360, 1213 and 1915 kg/ha, respectively) indicating wide gap of 54.83, 47.29, 67.08, 74.28, 106.76 and 154.32 per cent respectively, across the states. Moreover, in case of fodder was also found wide yield gap. The net returns obtained under FLDs was Rs. 32763, 21798, 18977, 19846, 20334 and 35197 per ha, of finger millet, foxtail millet, kodo millet, little millet, barnyard millet and proso millet respectively.

Per cent yield gap in small millets across the centres

S. NO.	Center	Finger millet	Foxtail millet	Little millet	Kodo millet	Proso millet	Barnyard millet
1	P.C. unit	24.90	106.26	102.71	-	-	-
2	VPKAS Almora	18.61	-	-	-	-	12.80
3	Mandya	21.69	-	-	-	-	-
4	Hagari	-	69.73	-	-	-	-
5	Nandyal	-	13.41	-	-	-	-
6	Vizianagaram	43.11	-	62.68	-	-	-
7	Jagdalpur	110.13	-	113.58	96.53	-	-
8	Athiyandal	58.31	42.74	45.80	43.88	154.31	71.71
9	Ranichauri	-	-	-	-	-	-
10	Dindori	-	-	82.56	84.80	-	-
11	Rewa	-	-	47.03	45.63	-	-
12	Kolhapur	29.02	-	29.87	-	-	-
13	Ranchi	-	-	-	-	-	-
14	Waghai	72.25	-	100.67	-	-	-

	Total	45.70	58.03	73.11	67.71	154.31	42.25

Table -6 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of finger millet : 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
PC unit	2498	2000	4256	3500	55022	45000	32418	22900	2.45	2.00
Almora	1854	1563	4350	4055	63694	53340	27989	17854	0.80	0.50
Mandya	2967	2438	4836	3681	81430	66471	55695	41371	3.17	2.91
Vizianagaram	2576	1800	7236	5147	51517	36004	30983	19809	1.51	1.22
Jagdalpur	1742	829	5573	2480	37621	17826	25701	11577	2.16	1.85
Athiyandal	2381	1504	2796	2073	60923	38639	37423	18989	2.59	1.97
Ranichauri	1754	-	4636	-	46665	-	16874	-	1.57	-
Kolhapur	1809	1402	2334	1805	38517	29842	15075	10892	1.64	1.57
wagai	2775	1611	6634	3847	75400	43768	52705	23794	2.32	1.19
Mean	2262	1461	4739	2954	56754	36766	32763	18576	2.02	1.47

Table -7 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of foxtail millet: 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
PC unit	1745	846	2971	1346	39881	18266	20512	6766	2.07	1.59
Hagari	1015	598	1900	1113	20133	14988	10983	5838	2.20	1.67
Athiyandal	2184	1530	2616	1640	55926	39093	32426	19443	2.38	1.99
Nandyal	1894	1670	2465	2238	35886	31732	23259	17894	2.82	2.26
Mean	1710	1161	2488	1584	37957	26020	21795	12485	2.37	1.88

Table -8 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of kodo millet : 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
Jagdalpur	1590	809	3970	2022	33749	17188	22638	10350	2.04	1.51
Athiyandal	1600	1112	2287	1537	49144	34144	25644	14494	2.09	1.74
Dindori	1447	783	1763	1054	37053	20095	17053	4095	1.85	1.26
Rewa	801	550	1643	1018	17219	11426	10574	5320	2.62	1.94
Mean	1360	814	2416	1408	34291	20713	18977	8565	2.15	1.61

Table -9 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of little millet: 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
PC unit	1794	885	2888	1563	41242	19263	22613	7763	2.21	1.68
Vizianagaram	1430	879	5224	4562	29130	18034	16144	8459	1.24	0.88
Jagdalpur	833	390	2708	1305	22187	10390	12839	4790	1.37	0.86
Athiyandal	939	644	1473	1037	33583	19857	10083	207	1.43	1.01
Dindori	1068	585	1469	1046	32782	18085	12782	2085	1.64	1.13
Rewa	619	421	1365	905	16728	11444	10634	5518	2.76	1.93
Kolhapur	952	733	1330	1097	39061	30135	15619	11185	1.67	1.59
Wagai	2069	1031	6192	4111	80657	43263	58057	23384	2.57	1.18
Mean	1213	696	2831	1953	36921	21309	19846	7924	1.86	1.28

Table -10 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of barnyard millet : 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
Almora	1639	1453	3223	3787	54717	47377	21761	13475	0.66	0.40
Athiyandal	1542	898	1729	1566	47129	27743	23629	8093	2.01	1.41
Ranichuri	1681	-	4714	-	45404	-	15612	-	1.52	-
Mean	1621	784	3222	1784	49083	25040	20334	7189	1.40	0.60

Table -11 : Grain yield (kg/ha), fodder yield (kg/ha) and economics of proso millet: 2017-18

Centre name	Grain Yield (kg /ha)		Fodder yield (kg/ha)		Gross return (Rs./ha)		Net return (Rs./ha)		B:C ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP	FLD	FP
Athiyandal	1915	753	2488	1200	58697	23193	35197	3542	2.50	1.18

Conclusion

Demonstrated small millet varieties yielded higher grain and fodder than the local varieties which were economically superior to local varieties.

Proposal of FLD's on Small Millets for the year 2018-19

Proposal of FLD's on Small Millets for the year 2018-19

SL. NO.	Center	FM	FTM	LM	KM	PM	BM	Total Area. ha
1	P.C. unit	20	5	-	5	-	-	30

2	VPKAS Almora	10	-	-	-	-	5	15
3	Mandya	20	-	-	-	-	-	20
4	Hagari	-	10	-	-	-	-	10
5	Nandyal	-	20	-	-	-	-	20
6	Vizianagaram	15	-	10	-	-	-	25
7	Jagdalpur	15	-	5	10	-	-	30
8	Athiyandal	5	5	5	5	5	5	30
9	Ranichauri	10	-	-	-	-	10	20
10	Dindori	-	-	15	15	-	-	30
11	Hanamanamatti	-	5	5	-	-	5	15
12	Kolhapur	15	-	5	-	-	-	20
13	Kanke	15	-	-	-	-	-	15
14	Waghai	10	-	10	-	-	-	20
	Total	135	45	55	35	5	25	300

Improved varieties to be demonstrated under FLDs through AICRP (SM) 2018-19

State	Finger millet	Foxtail millet	Kodo millet	Little millet	Barnyard millet	Proso millet
Karnataka	GPU-67 GPU-66 KMR 204 KMR 301	SiA 3088 SiA 3156	RK 390-25	-	-	-
Uttarakhand	VL-352 VL-376 VL-379 VL-348	-	-	-	VL 207 PRJ -1	-
Andhra Pradesh	VR 847	SiA 3088 SiA 3156	-	JK – 8 OLM 203	-	-
Madhya Pradesh	-	-	RK-390 -25 JK -98 JK-439	JK – 8 JK-36	-	-
Tamil Nadu	CO-15 GPU-28 CO-4	CO-7 SiA 3156	TNAU 86 CO-3	CO-4 OLM 203 TNAU 91	CO-2 VL 207	TNAU 202 CO-5
Maharashtra	KOPN-235	-	-	KOPLM-83	-	-
Chattisgarh	GPU 28 CG-2 Indira ragi	-	Indira kodo 1 RK 390-25	BL-4 BL-6	-	-
Jharkhand	GPU 67 BBM-10 A 404	-	-	-	-	-
Gujarat	GNN-6 GN- 7	-	-	GV-2 GNV-3	-	-