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SOCIAL SCIENCES


Azadi Ka
Amrit Mahotsav

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ICAR-Indian Institute of Wheat and Barley Research, Karnal

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All India Coordinated Research Project on Wheat and Barley

**PROGRESS REPORT
2021-22**

SOCIAL SCIENCES

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In the end, it is stated that although utmost care has been taken to avoid any error in presentation of the results in this report, any error/omission is unintended and may please be brought to the notice of the undersigned.



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CONTENTS

S.No.	Particulars	Page
1.	Frontline Demonstrations (FLDs) 2021-2022	1
2.	Barley Frontline Demonstrations (FLDs) 2021-2022	2
3.	Centre wise distribution of barley FLDs	2
4.	State wise distribution of barley FLDs	4
5.	Zone wise distribution of barley FLDs	4
6.	State wise yield gain	5
7.	Zone wise productivity over regional productivity	5
8.	Centre wise performance of improved barley varieties	6
9.	Variety wise performance of improved barley varieties	7
10.	Yield potential of barley varieties in different zones	8
11.	Barley varieties grown in different zones	9
12.	Barley FLDs conducted at ICAR-IIWBR, Karnal centre	9
13.	Constraints analysis in different barley producing zones of India	9
14.	Suggestions by cooperating centres	12
15.	Farmers' perception about barley FLDs	13
16.	Monitoring of Barley FLDs and SCSP Wheat Demonstrations	13
17.	Wheat Demonstrations conducted under SCSP Programme during 2021-2022	22
18.	District wise distribution of Wheat Demonstrations	22
19.	State wise distribution of Wheat Demonstrations	23
20.	District wise yield gain under Wheat Demonstrations	23
21.	State wise yield gain under Wheat Demonstrations	24
22.	Varietal performance under Wheat Demonstrations	25
23.	Highest yield of Wheat variety DBW 303 and DBW 187 under Wheat Demonstrations	27
24.	Improved and check wheat varieties at farmers' field in Punjab and Haryana during rabi 2021-22	27
25.	Costs and returns for SCSP Wheat Demonstrations and Barley FLDs vis-à-vis check plots	28
26.	Technology Outreach Programme	31
27.	Annexure-I : Categorywise number of barley FLDs farmers	i-iii
28.	Annexure-II : Information on barley varieties demonstrated in FLDs during 2021-22	i
29.	Annexure-III : Guidelines for conducting Frontline Demonstrations (FLDs)	i-xiii

Frontline Demonstrations (2021-2022)

Globally, wheat and barley crops have been under cultivation in 270.8 million hectares (Wheat: 222.21 million hectares and Barley: 48.59 million hectares) with the annual production reaching an all-time highest output estimated at 924.11 million tonnes (Wheat: 779.03 million tonnes and Barley: 145.08 million tonnes) (Source: USDA). The nutri-rich cereals respectively hold the first and fourth position in terms of global cereals acreage for the period 2021-2022. In India, these *Rabi* cereals are grown in 31.09 million hectares (23.78% of total crop acreage) contributing 34.34 per cent of the total foodgrains produced during 2021-2022. Wheat has been under cultivation in 30.54 million hectares and barley covered 0.54 million hectares during the 2021-2022 *Rabi* season (Source: III Advance Estimates, Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, India). In the current production season (2021-2022), wheat output has been estimated at 106.41 million tonnes with national average productivity of 3484 kg per ha. Similarly, barley registered 1.59 million tonnes during 2021-2022 from 0.54 million hectares with average national productivity of 2930 kg/ha.

Frontline demonstrations (FLDs) conducted across regions also witnessed a similar kind of trend. The improved varieties and technologies demonstrated at farmers' fields through the FLD programme exhibited significant yield gain across regions. The gaps (yield and information) across regions should be bridged through need-based interventions by identifying the location-specific constraints. ICAR-IIWBR strives to make continuous efforts in popularizing the region-specific superior varieties as well as micro-level strategies to enhance wheat and barley productivity. Despite several outreach programmes, there exists the need for increasing crop productivity through different scientist-farmer interface activities with more emphasis on seed as well as variety replacement, integrated crop (nutrient, pest & diseases, water, weed etc.) management, incorporation/ retention of crop residues and soil health management. The farm advisory services through social media and rigorous training of field-level extension functionaries or subject matter specialists by the institute have also played a key role in taking contingent management measures. Several other programmes have been initiated as well at the institute level to transfer the efficient technologies to farmers' fields. The creation of awareness through mass and print media on seed treatment, seed and variety replacement, and crop management helped to increase the farmers' livelihood and welfare. Procurement by different authorized agencies has also motivated the

farmers to retain the same or allot more area under the respective crop. Developing storage facilities both at the farm level and national level is the need of the hour and it warrants some policy interventions. The report highlights the outcome of barley FLDs, yield gain due to FLDs, wheat demonstrations under SCSP, costs and returns as well as constraints in barley production.

Barley Frontline Demonstrations (2021-2022)

During the *rabi* crop season 2021-22, 250 Barley Frontline Demonstrations (BFLDs) of one acre each were allotted to 32 cooperating centers all over India in seven states/UT namely, Himachal Pradesh, Uttar Pradesh, Jammu & Kashmir, Punjab, Haryana, Rajasthan and Madhya Pradesh. Out of these, 228 BFLDs were conducted by 29 centers, covering 238 acres area of 277 farmers (Table 1a). Improved barley varieties with complete package of practices (irrigation management, nutrient management, weed control, seed treatment etc.) were demonstrated.

Table 1a: Centre wise distribution of barley FLDs during *rabi* 2021-22 (in acres)

S.No.	Zone and Centre	BFLDs Allotted	BFLDs Conducted	Area sown (acres)	No. of farmers/ locations
Northern Hills Zone (NHZ)					
1.	CSKHPKV, HAREC, Bajaura, Kullu (HP)	7	7	7	29
2.	ICAR-IARI, RS, Amartara Cottage, Shimla (HP)	5	Not conducted	-	-
3.	KVK (YSPUH&F), Lahaul & Spiti -2, Tabo, Kaza, L&S (HP)	5	Not conducted	-	-
North Eastern Plains Zone (NEPZ)					
4.	NDUA&T, Kumarganj, Ayodhya (UP)	10	10	10	10
5.	KVK (IAS-BHU), Barkachha, Mirzapur (UP)	10	10	12*	12
6.	CSAUA&T, Kanpur (UP)	10	10	10	10
7.	BHU, Varanasi (UP)	12	Not conducted	-	-
8.	KVK, Gorakhpur-2, (Guru Gorakshnath Seva Sansthan), Chauk Mafi (Peppeganj), Jangal Kaudiya, Gorakhpur (UP)	10	10	10	10
North Western Plains Zone (NWPZ)					
9.	KVK (SKUAST-Jammu), Rajhani, Kathua (UT of J&K)	8	8	8	21
10.	PAU, Ludhiana (Punjab)	8	8	8	8
11.	KVK (PAU), Khokhar Khurd, Mansa (Punjab)	10	10	10	13
12.	KVK (PAU), Kheri, Patran Road, Sangrur (Punjab)	5	5	6*	6
13.	KVK (PAU), Goneana, Muktsar (Punjab)	5	5	5	5
14.	KVK (PAU), Dabwali Road, Near Kheti Bhawan, Bathinda (Punjab)	5	5	5	5
15.	CCSHAU, Hisar (Haryana)	10	10	10	10
16.	KVK (BB Ashram), Rampura, Rewari (Haryana)	8	8	8	7
17.	KVK (CCSHAU), Bhiwani (Haryana)	10	10	12*	12
18.	ICAR-IIWBR, Karnal (Haryana)	5	5	5	5
19.	RARI (SKNAU), Durgapura, Jaipur (Rajasthan)	10	10	10	10
20.	KVK (Pragati Trust), Chomu, Jaipur (Rajasthan)	5	5	5	5

21.	KVK (AU-Kota), Akorashi, Dhindora, Hindauncity, Karauli (Rajasthan)	8	8	11*	11
22.	KVK, Alwar-1 (SKNAU-Jobner), Navgaon, District-Alwar (Rajasthan)	5	5	5	5
23.	ACES, Amity University Uttar Pradesh, Noida (UP)	10	10	10	10
Central Zone (CZ)					
24.	RCOA (MPUA&T), Udaipur (Rajasthan)	10	10	10	10
25.	KVK (MPUA&T), Dhoinda, Rajasmand (Rajasthan)	10	10	10	10
26.	KVK (JNKVV), Kuthulia Farm, Rewa (MP)	8	8	8	8
27.	KVK (JNKVV), Purushottampur, Panna (MP)	8	8	8	8
28.	KVK (JNKVV), Tikamgarh (MP)	8	8	8	10
29.	KVK (RVSKVV), Biaora, Kothi Bagh, Rajgarh (MP)	5	5	5	5
30.	COA (JNKVV), Ganj Basoda, Vidisha (MP)	10	10	10	10
31.	KVK (BUA&T-Banda), Lalitpur (UP)	5	5	7*	7
32.	KVK (BUA&T-Banda), Bharari, Bhojla, Jhansi (UP)	5	5	5	5
Total		250	228	238	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 1b: Centre wise distribution of barley FLDs during rabi 2021-22 (in hectares)

S.No.	Zone and Centre	BFLDs Allotted	BFLDs Conducted	Area sown (acres)	No. of farmers/ locations
Northern Hills Zone (NHZ)					
1.	CSKHPKV, HAREC, Bajaura, Kullu (HP)	2.8	2.8	2.8	29
2.	ICAR-IARI, RS, Amartara Cottage, Shimla (HP)	2	Not conducted	-	-
3.	KVK (YSPUH&F), Lahaul & Spiti -2, Tabo, Kaza, L&S (HP)	2	Not conducted	-	-
North Eastern Plains Zone (NEPZ)					
4.	NDUA&T, Kumarganj, Ayodhya (UP)	4	4	4	10
5.	KVK (IAS-BHU), Barkachha, Mirzapur (UP)	4	4	4.8*	12
6.	CSAUA&T, Kanpur (UP)	4	4	4	10
7.	BHU, Varanasi (UP)	4.8	Not conducted	-	-
8.	KVK, Gorakhpur-2, (Guru Gorakshnath Seva Sansthan), Chauk Mafi (Peppeganj), Jangal Kaudiya, Gorakhpur (UP)	4	4	4	10
North Western Plains Zone (NWPZ)					
9.	KVK (SKUAST-Jammu), Rajhani, Kathua (UT of J&K)	3.2	3.2	3.2	21
10.	PAU, Ludhiana (Punjab)	3.2	3.2	3.2	8
11.	KVK (PAU), Khokhar Khurd, Mansa (Punjab)	4	4	4	13
12.	KVK (PAU), Kheri, Patran Road, Sangrur (Punjab)	2	2	2.4*	6
13.	KVK (PAU), Goneana, Muktsar (Punjab)	2	2	2	5
14.	KVK (PAU), Dabwali Road, Near Kheti Bhawan, Bathinda (Punjab)	2	2	2	5
15.	CCSHAU, Hisar (Haryana)	4	4	4	10
16.	KVK (BB Ashram), Rampura, Rewari (Haryana)	3.2	3.2	3.2	7
17.	KVK (CCSHAU), Bhiwani (Haryana)	4	4	4.8*	12
18.	ICAR-IWBR, Karnal (Haryana)	2	2	2	5
19.	RARI (SKNAU), Durgapura, Jaipur (Rajasthan)	4	4	4	10
20.	KVK (Pragati Trust), Chomu, Jaipur (Rajasthan)	2	2	2	5
21.	KVK (AU-Kota), Akorashi, Dhindora, Hindauncity, Karauli (Rajasthan)	3.2	3.2	4.4*	11
22.	KVK, Alwar-1 (SKNAU-Jobner), Navgaon, District-Alwar (Rajasthan)	2	2	2	5
23.	ACES, Amity University Uttar Pradesh, Noida (UP)	4	4	4	10

Central Zone (CZ)					
24.	RCOA (MPUA&T), Udaipur (Rajasthan)	4	4	4	10
25.	KVK (MPUA&T), Dhoinda, Rajasmand (Rajasthan)	4	4	4	10
26.	KVK (JNKVV), Kuthulia Farm, Rewa (MP)	3.2	3.2	3.2	8
27.	KVK (JNKVV), Purushottampur, Panna (MP)	3.2	3.2	3.2	8
28.	KVK (JNKVV), Tikamgarh (MP)	3.2	3.2	3.2	10
29.	KVK (RVSKVV), Biaora, Kothi Bagh, Rajgarh (MP)	2	2	2	5
30.	COA (JNKVV), Ganj Basoda, Vidisha (MP)	4	4	4	10
31.	KVK (BUA&T-Banda), Lalitpur (UP)	2	2	2.8*	7
32.	KVK (BUA&T-Banda), Bharari, Bhojla, Jhansi (UP)	2	2	2	5
Total		100	91.2	95.2	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 2a: State wise distribution of barley FLDs during *rabi* 2021-22 (in acres)

S.No.	State/UT	BFLDs Allotted	BFLDs Conducted	Area Sown (acres)	No. of farmers/ locations
1.	HP	17	7	7	29
2.	UT of J&K	8	8	8	21
3.	UP	72	60	64	64
4.	Punjab	33	33	34	37
5.	Haryana	33	33	35	34
6.	Rajasthan	48	48	51	51
7.	MP	39	39	39	41
Total		250	228	238	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 2b: State wise distribution of barley FLDs during *rabi* 2021-22 (in hectares)

S.No.	State/UT	BFLDs Allotted	BFLDs Conducted	Area Sown (hectares)	No. of Farmers/ locations
1.	HP	6.8	2.8	2.8	29
2.	UT of J&K	3.2	3.2	3.2	21
3.	UP	28.8	24.0	25.6	64
4.	Punjab	13.2	13.2	13.6	37
5.	Haryana	13.2	13.2	14.0	34
6.	Rajasthan	19.2	19.2	20.4	51
7.	MP	15.6	15.6	15.6	41
Total		100	91.2	95.2	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 3a: Zone wise distribution of barley FLDs during *rabi* 2021-22 (in acres)

S.N.	Zone	BFLDs Allotted	BFLDs Conducted	Area Sown (acres)	No. of Farmers/ Locations
1.	NHZ	17	7	7	29
2.	NEPZ	52	40	42	42
3.	NWPZ	112	112	118	133
4.	CZ	69	69	71	73
Total		250	228	238	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 3b: Zone wise distribution of barley FLDs during rabi 2021-22 (in hectares)

Zone	BFLDs Allotted	BFLDs Conducted	Area sown (hectares)	No. of farmers/ locations
NHZ	6.8	2.8	2.8	29
NEPZ	20.8	16.0	16.8	42
NWPZ	44.8	44.8	47.2	133
CZ	27.6	27.6	28.4	73
Total	100	91.2	95.2	277

* Area covered more than allotted which is restricted to area equal to allotted FLDs.

Table 4: State wise yield gain during rabi 2021-22

State	BFLDs yield (q/ha)	Check yield (q/ha)	Gain (%)
HP	28.83	21.38	34.85***
Eastern UP	34.70	27.95	24.15***
Central UP	38.88	30.35	28.09***
Western UP	56.18	51.10	09.93***
All UP	38.83	32.03	21.23***
UT of J&K	27.50	20.78	32.37***
Punjab	38.80	35.03	10.78***
Haryana	43.93	40.98	07.20**
Rajasthan (NWPZ)	61.45	50.18	22.47***
Rajasthan (CZ)	42.25	35.30	19.69***
All Rajasthan	53.93	44.35	21.59***
MP	37.85	27.93	35.54***

*** Significant at 1 per cent level, ** Significant at 5 per cent level

The highest gain in barley yield was recorded in MP (35.54%) followed by HP (34.85%), UT of J&K (32.37%), Central UP (28.09%), Eastern UP (24.15%), Rajasthan NWPZ (22.47%) and All Rajasthan (21.59%). The lowest gain in yield was reported in Haryana (7.20%) (Table 4).

Table 5: Zone wise productivity over regional productivity during rabi 2021-22

Zone	BFLDs yield (q/ha)	Regional mean yield (q/ha)	Gain (%)
NHZ	28.83	20.70	39.25***
NEPZ	34.70	27.70	25.27***
NWPZ	44.98	38.18	17.81***
CZ	39.28	29.65	32.46***

*** Significant at 1 per cent level ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

The yield gain due to improved varieties over regional mean yield was highest in NHZ (39.25%) followed by CZ (32.46%), NEPZ (25.27 %) and NWPZ (17.81 %) (Table 5).

Table 6: Zone wise productivity over check during rabi 2021-22

Zone	BFLDs yield (q/ha)	Check mean yield (q/ha)	Gain (%)
NHZ	28.83	21.38	34.85***
NEPZ	34.70	27.95	24.15***
NWPZ	44.98	39.03	15.25***
CZ	39.28	30.45	28.98***

*** Significant at 1 per cent level, ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

The yield gain due to improved varieties over check was highest in NHZ (34.85 %) followed by CZ (28.98 %), NEPZ (24.15%) and NWPZ (15.25 %) (Table 6). Therefore, efforts should be made to increase barley yield in the NHZ, CZ and NEPZ by promoting recent barley production technologies in collaboration with the state department of agriculture.

Centre wise data analysis revealed that the yield gain under barley FLD was highest at center Rewa (89.13%) followed by Tikamgarh (50.80%) and Lalitpur (39.57%) in CZ, Gorakhpur (34.97) in NEPZ, Bajaura (34.85%) in NHZ and Kathua (32.37%) in NWPZ. The yield gain was lowest at Bathinda (03.02%) in NWPZ (Table 7).

Table 7: Centre wise performance of improved barley varieties during *rabi* 2021-22

Zone and Centre	BFLDs yield (q/ha)	Check yield (q/ha)	Gain (%)
NHZ			
Bajaura	28.83	21.38	34.85***
NEPZ			
Ayodhya	35.75	27.75	28.83***
Mirzapur	18.38	17.25	06.52***
Kanpur	43.83	36.25	20.90***
Gorakhpur	44.10	32.68	34.97***
NWPZ			
Kathua	27.50	20.78	32.37***
Ludhiana	40.33	37.20	08.40 ^{NS}
Mansa	32.70	28.85	13.34***
Sangrur	45.25	38.25	18.30***
Muktsar	40.28	36.30	10.95**
Bathinda	44.40	43.10	03.02**
Hisar	46.00	44.75	02.79 ^{NS}
Rewari	50.38	44.25	13.84***
Bhiwani	38.38	36.50	05.14***
Karnal	46.00	43.60	05.50**
Durgapura, Jaipur	65.50	52.00	25.96***
Chomu, Jaipur	54.15	42.78	26.59***
Karauli	65.75	55.35	18.79***
Alwar-1	51.20	42.50	20.47***
Noida	56.18	51.10	9.93***
CZ			
Udaipur	44.25	37.50	18.00***
Rajasmad	40.23	33.10	21.53***
Rewa	37.60	19.88	89.13***
Panna	29.38	23.60	24.47***
Tikamgarh	32.95	21.85	50.80***
Rajgarh	49.00	38.15	28.44***
Vidisha	42.73	37.00	15.47***
Lalitpur	38.98	27.93	39.57***
Jhansi	38.75	33.75	14.81***

*** Significant at 1 per cent level, ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

Table 8: Variety wise performance of improved barley varieties during *rabi* 2021-22

Zone and Centre	Improved variety	Average yield (q/ha)	Check variety	Average yield (q/ha)	Yield gain over check (%)
NHZ					
Bajaura	BHS 400	31.58	HBL 113 (Vimal)	24.58	28.48***
Bajaura	HBL 713	32.33	HBL 113 (Vimal)	24.70	30.87***
Bajaura	HBL 804	30.83	Local	23.33	32.15***
Bajaura	VLB 118	28.75	HBL 316 (Gopi)	22.50	27.78 ^{NS}
NEPZ					
Ayodhya	DWRB 137	34.58	Azad (K 125)	27.08	27.70**
Ayodhya	DWRB 137	36.25	Narendra Jau 2	26.88	34.88*
Ayodhya	RD 2907	36.25	Narendra Jau 2	28.50	27.19***
Mirzapur	RD 2907	18.75	Azad (K 125)	17.13	9.49***
Mirzapur	DWRB 137	18.00	Azad (K 125)	17.38	3.60**
Kanpur	DWRB 137	44.00	K 508	36.00	22.22***
Kanpur	RD 2907	43.63	K 508	36.50	19.52***
Gorakhpur	DWRB 137	43.75	RD 2660	33.05	32.38***
Gorakhpur	RD 2907	44.45	RD 2660	32.30	37.62***
NWPZ					
Kathua	RD 2907	27.50	Local	20.78	32.37***
Ludhiana	DWRB 137	41.08	PL 807	37.50	9.53 ^{NS}
Ludhiana	DWRB 182	40.00	PL 426	30.00	33.33 ^{NS}
Mansa	DWRB 137	32.08	PL 426	28.75	11.57***
Mansa	DWRB 182	40.00	PL 426	30.00	33.33 ^{NS}
Sangrur	DWRB 137	45.25	PL 807	38.25	18.30***
Muktsar	DWRB 137	39.85	PL 426	36.63	8.81 ^{NS}
Muktsar	DWRB 182	42.00	PL 426	35.00	20.00 ^{NS}
Bathinda	DWRB 137	44.25	PL 426	42.88	3.21**
Bathinda	DWRB 182	45.00	PL 426	44.00	2.27 ^{NS}
Hisar	DWRB 137	46.00	BH 946	44.75	2.79 ^{NS}
Rewari	DWRB 137	50.53	BH 393	44.25	14.18***
Rewari	DWRB 182	49.25	BH 393	44.25	11.30 ^{NS}
Bhiwani	DWRB 137	38.30	BH 393	36.33	5.44***
Bhiwani	DWRB 182	39.50	BH 393	38.75	1.94 ^{NS}
Karnal	DWRB 137	46.25	BH 393	43.88	5.41**
Karnal	DWRB 182	45.00	BH 393	42.50	5.88 ^{NS}
Durgapura, Jaipur	DWRB 137	66.43	RD 2552	52.15	27.37***
Durgapura, Jaipur	DWRB 137	63.33	RD 2660	51.68	22.54***
Chomu, Jaipur	DWRB 137	53.10	RD 2660	44.03	20.61***
Chomu, Jaipur	DWRB 137	55.73	RD 2035	40.93	36.16**
Karauli	DWRB 137	65.75	RD 2035	55.35	18.79***
Alwar-1	DWRB 137	51.20	RD 2035	42.50	20.47***
Noida	DWRB 137	56.18	K 508	51.10	9.93***
CZ					
Udaipur	DWRB 137	44.25	RD 2035	37.50	18.00***
Rajasmand	DWRB 137	40.23	RD 2660	33.10	21.53***
Rewa	DWRB 137	37.60	JB 58	19.88	89.13***
Panna	DWRB 137	29.38	JB 58	23.60	24.47***
Tikamgarh	DWRB 137	32.95	JB 58	21.85	50.80***

Zone and Centre	Improved variety	Average yield (q/ha)	Check variety	Average yield (q/ha)	Yield gain over check (%)
Rajgarh	DWRB 137	49.00	JB 58	38.15	28.44***
Vidisha	DWRB 137	42.73	JB 58	37.00	15.47***
Lalitpur	DWRB 137	38.98	Munda	27.93	39.57***
Jhansi	DWRB 137	38.75	Munda	33.75	14.81***
Dual Purpose Barley					
NHZ-Bajaura					
Av. Grain Yield (q/ha)	HBL 804	25.08	Harit (HBL 276)	17.35	44.52***
Av. Green Fodder Yield (q/ha)	HBL 804	33.48	Harit (HBL 276)	28.18	18.81***

*** Significant at 1 per cent level ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

The varieties HBL 713 (32.33 q/ha) at Bajaura centre in NHZ, RD 2907 (44.45 q/ha) at Gorakhpur in NEPZ, DWRB 137 (66.43 q/ha) at Durgapura Jaipur in NWPZ and DWRB 137 (49.00 q/ha) at Rajgarh in CZ were the highest average yielding. The dual purpose barley variety HBL 804 yielded 25.08q/ha grain yield and 33.48 q/ha green fodder yield at Bajaura center, in comparison to this, the check variety HBL 276 yielded 17.35 q/ha grain yield and 28.18 q/ha green fodder yield at Bajaura center (Table 8). It is evident from Table 8 that recent varieties outperformed old/check varieties at all the locations. The yield gain due to varietal intervention ranged from 3.21% at Bathinda center in Punjab to 89.13% at Rewa center in MP.

Table 9 : Yield potential of barley varieties in different zones during *rabi* 2021-22

Zone	Centre	Variety	Yield(q/ha)
NHZ	Bajaura	HBL 713	36.00
NEPZ	Gorakhpur	RD 2907	46.00
NWPZ	Durgapura Jaipur	DWRB 137	70.00
CZ	Rajgarh	DWRB 137	51.00

It is evident from Table 9 that varieties HBL 713 (36.00 q/ha), RD 2907 (46.00 q/ha), DWRB 137 (70.00 q/ha) and DWRB 137 (51.00 q/ha) performed better than other varieties at Bajaura, Gorakhpur, Durgapura Jaipur and Rajgarh centres in the NHZ, NEPZ, NWPZ and CZ, respectively (Table 9).

Table 10: Barley varieties grown in different zones during *rabi* 2021-22

Zone	Improved varieties	Check varieties	Popular varieties in the region
NHZ	VLB 118, BHS 400, HBL 713, HBL 804, HBL 804 Dual Purpose	HBL 316 (Gopi), HBL 276 (Harit), HBL 113 (Vimal), Local	Sonu, Dolma, HBL 276, HBL 316, Local
NEPZ	DWRB 137, RD 2907	Narendra Jau-2, K 125 (Azad), K 508, RD 2660	Narendra Jau-2, Narendra Jau-7, Lakhan, Azad, Jyoti, Jagriti, Amber, K 125 (Azad), K 508, K 1055, RD 2660, RD 2794, Local
NWPZ	DWRB 137, DWRB 182, RD 2907	PL 807, PL 426, BH 393, BH 946, RD 2035, RD 2552, RD 2660	RD 2907, PL 807, PL 426, DWRUB 52, BH 393, BH 946, RD 2035, RD 2052, RD 2715, RD 2786, RD 2794, Local
CZ	DWRB 137	JB 58, RD 2035, RD 2660, Munda	RD 2035, RD 2552, RD 2715, RD 2899, RD 2660, RD 2786, JB 58, Karan 201, Munda, Narendra Jau-1, Local

Barley FLDs conducted at ICAR-IIWBR, Karnal centre

During the year 2021-22, Barley FLDs were conducted by ICAR-IIWBR, Karnal and ICAR-IIWBR, Seed and Research Farm, Hisar using improved barley variety DWRB 137 and DWRB 182, covering 5 acres area of five farmers, in villages Pabra in district Hisar, Haryana. The demonstrations were conducted with complete package of practices.

Constraints analysis in different barley producing zones of India (2021-22)

Variation in yield levels among different states, farmers and farms leads to yield gap in different states and different zones. There are many reasons of this yield gap which need to be addressed to increase area, production and productivity of barley across different zones. Through constraint analysis an effort has been made to identify the factors impeding barley production in different parts of the country. For this an inventory of constraints was developed after thorough review of literature and taking experts' opinion. Data were collected on a well designed pre-structured questionnaire mailed to all the cooperating centres conducting barley FLDs. The responses were collected on a three point continuum *viz.*; most serious, serious and not serious. The scores were assigned as 2, 1 and 0 for the most serious, serious and not serious constraints, respectively. Based on the total score, the level of seriousness for each constraint has been calculated and final ranks have been assigned.

Northern Hills Zone (NHZ)

In NHZ, high cost of inputs, yellow rust, *Chenopodium album*, non-availability of labour, small land holdings, untimely rain, lack of irrigation facilities, lodging, poor information delivery by state extension machinery, poor participation in exposure visits, poor participation in kisan melas/field days/kisan goshtis/trainings and low price of barley grains were perceived as major constraints (Table 11).

Table 11: Constraints in NHZ (n=29)

Constraints	Score	Rank
High cost of inputs	58	I
Yellow Rust	29	II
<i>Chenopodium album</i> (Bathua)	29	II
Non availability of labour	29	II
Small land holding	29	II
Untimely rain	29	II
Lack of irrigation facilities	29	II
Lodging	29	II
Poor information delivery by state extension machinery	29	II
Poor participation in exposure visits arranged by various departments	29	II
Poor participation in kisanmelas/field days/kisangosthi/trainings	29	II
Low price of grain	29	II

North Eastern Plains Zone (NEPZ)

In this zone, high cost of inputs, mandusi (*Phalaris minor*), non-availability of labour, decline in water table, untimely rain, small land holding, poor quality of herbicides/pesticides, poor information delivery by state extension machinery, poor participation in exposure visits arranged by various departments and poor participation in kisan melas/ field days/ kisan gosthi/ trainings were identified as major constraints in NEPZ. Most of the constraints were administrative in nature which needs immediate attention by the state governments of this zone. Marketing of barley and ensuring good price is a concern for all the farmers in NEPZ (Table 12).

Table 12: Constraints in NEPZ (n=42)

Constraints	Score	Rank
High cost of inputs	84	I
<i>Phalaris minor</i> (Mandusi)	73	II
Non availability of labour	62	III
Decline in water table	60	IV
Untimely rain	52	V
Small land holding	52	V
Poor quality of herbicides/ pesticides	52	V
Poor information delivery by state extension machinery	42	VI
Poor participation in exposure visits arranged by various departments	42	VI
Poor participation in kisanmelas/field days/kisangosthi/trainings	42	VI

North Western Plains Zone (NWPZ)

NWPZ is the most important zone for the production of barley in the country. Farmers of this zone perceived decline in water table, high cost of inputs, *Phalaris minor*, non-availability of labour, small land holding, low price of barley grains, non-availability of seeds of newly released varieties, higher custom hiring rate of land leveling, field preparation, sowing & harvesting as major constraints. In NWPZ barley is grown for industrial purpose on contract farming too. Hence, there is a need to address these constraints for the benefit of the farmers and for the area expansion under barley crop (Table 13).

Table 13: Constraints in NWPZ (n=129)

Constraints	Score	Rank
Decline in water table	194	I
High cost of inputs	165	II
<i>Phalaris minor</i> (Mandusi)	144	III
Non availability of labour	133	IV
Small land holding	127	V
Low price of grains	120	VI
Non availability of seeds of newly released varieties	114	VII
Higher custom hiring rate of land leveling, field preparation, sowing & harvesting	99	VIII
Lack of facility of canal irrigation water	99	VIII
High temperature at maturity	96	IX

Central Zone (CZ)

In CZ, decline in water table, *Phalaris minor*, high cost of inputs, non-availability of labour, poor information delivery by state extension machinery, low price of barley grains, small land holding, lodging, poor participation in kisanmelas/field days/kisangosthi/trainings and lack of training facility were perceived as major production constraints of barley crop (Table 14).

Table 14: Constraints in CZ (n=70)

Constraints	Score	Rank
Decline in water table	130	I
<i>Phalaris minor</i> (Mandusi)	120	II
High cost of inputs	120	II
Non availability of labour	85	III
Poor information delivery by state extension machinery	70	IV
Low price of grains	70	IV
Small land holding	60	VI
Lodging	60	VI
Poor participation in kisanmelas/field days/kisangosthi/trainings	60	VI
Lack of training facility	60	VI

Major constraints impeding barley production in the country

Overall analysis of constraints in different zones clearly indicated that high cost of inputs, decline in water table, *Phalaris minor*, non-availability of labour, small land holding, low price of barley grains, poor participation in exposure visits arranged by various departments, untimely rain, lodging and poor information delivery by state extension machinery were identified as major constraints affecting barley production and productivity in the country (Table 16). Farmers need to be educated and upskilled on recent barley production technologies, complete package of practices and soil health management. There is a need of government intervention to ensure supply of quality seeds as well as quality inputs to the farmers. Farmers need to be updated on impact of climate change on barley cultivation and what are the adaptation strategies they can adopt to mitigate it. To ensure better price, farmers have to go for quality barley production. There is a need to register barley growers on e-NAM platform for selling of barley.

Table 15: Major constraints impeding barley production in the country (n=270)

Constraints	Score	Rank
High cost of inputs	427	I
Decline in water table	384	II
<i>Phalaris minor</i> (Mandusi)	337	III
Non availability of labour	309	IV
Small land holding	268	V
Low price of grain	261	VI
Poor participation in exposure visits arranged by various departments	245	VII
Untimely rain	219	VIII
Lodging	215	IX
Poor information delivery by state extension machinery	213	X

Table 16: Suggestions by the cooperating centers of different zones for the smooth conduct of Barley FLDs

Suggestions	Zone			
	NHZ	NEPZ	NWPZ	CZ
• Release of funds should be before the start of sowing	√	√	√	√
• Supply of seeds should be before time	√	√	√	√
• Increase budget for POL/hiring of vehicle for monitoring of FLD sites and organizing field day	√	√	√	√
• Number of demonstrations should be increased	√	√	√	√
• Include barley varieties suitable for limited irrigation condition under FLD.	√	√	√	√
• Provision of funds for training and extension literature should also be made	√	√	√	√
• Increase overall budget of barley FLD	√	√	√	√

Farmers' perception about barley FLDs

- All the FLD farmers were highly satisfied with performance of demonstrated barley varieties and production technologies. All the improved varieties outperformed check varieties on all locations.
- Neighboring farmers of the same village and nearby villages were highly satisfied with the performance of demonstrated varieties and were ready to adopt it in the coming crop season.
- All the farmers were highly satisfied with the yield advantage of demonstrated varieties at their field and with their increased income due to higher yield.
- Neighbouring farmers booked seed from FLD farmers for next crop season.

Monitoring of Frontline Demonstrations (FLDs) and SCSP Wheat Demonstrations during rabi 2021-22

The ICAR-IIWBR team accompanied by the experts from the Ministry of Agriculture & Farmers Welfare and the concerned centres monitored the following barley FLDs and SCSP Wheat Demonstrations centres during the *rabi* crop season 2021-22.

Team Leader	Centres Monitored	Dates of Monitoring
Dr. Satyavir Singh	Rewari, Alwar, Bhiwani and Hisar	07-10 March, 2022
Dr. Anuj Kumar	Ayodhya, Mirzapur, Kanpur	22-24 March, 2022
Dr. Raj Kumar	Rewa, Panna, Tikamgarh	22-27 February, 2022
Dr. Anil Khippal	Ludhiana, Amritsar, Kathua	02-04 March, 2022

Frontline Demonstrations (FLDs) Monitoring Report of Rewari, Alwar, Bhiwani and Hisar centers

Monitoring Center: KVK, Rewari (Haryana)

Monitoring Date: 07.03.2022

Monitoring Team

Dr. Satyavir Singh, Pr. Scientist & PI (Social Sciences), ICAR-IIWBR, Karnal, Haryana

Mr. Vishwajeet Singh, SMS (Agronomy), KVK, Rewari, Haryana

- The Team visited barley Frontline Demonstrations (FLDs) on 7th March, 2022 at village-Nimoth, district-Rewari (Haryana), conducted by KVK, Rewari using variety DWRB 137. The technology *i.e.* improved or newly released barley variety with complete package of practices was demonstrated at farmers' fields.
- The weeds infestation in FLDs was negligible. The barley FLDs crop was free from diseases. New barley variety has good tillering, good crop stand, long earhead, more number of grains per earhead and bold grains. The improved barley variety being popularized was DWRB 137. The check barley variety being used was BH 393. The neighbour farmers of the barley FLDs were impressed by

the performance of new barley variety. The neighbour farmers of barley FLDs ask the demonstrations farmers for booking new variety seed for the next year.

- No lodging was seen in demonstrations fields. Farmers expected more yield from the new variety than the old varieties. FLD is good source of Transfer of Technology. The farmers appreciated the work done by barley FLDs cooperators.

Monitoring Center: KVK, Alwar-1 (Rajasthan)

Monitoring Date: 08.03.2022

Monitoring Team

Dr. Satyavir Singh, Pr. Scientist & PI (Social Sciences), ICAR-IIWBR, Karnal, Haryana

Dr. Subhash Chandra Yadav, Head, KVK, Alwar-1 (Rajasthan)

Dr. Vikas Arya, AP (Animal Husbandry), KVK, Alwar-1 (Rajasthan)

Dr. Poonam Prajapati, SMS (Agricultural Extension), KVK, Alwar-1 (Rajasthan)

Dr. Hans Ram Mali, SMS (Agronomy), KVK, Alwar-1 (Rajasthan)

- The Team visited barley FLDs on 8th March, 2022 at village-Khillora, tehsil-Ramgarh, district-Alwar (Rajasthan), conducted by KVK, Alwar-1 using variety DWRB 137. The technology *i.e.* improved or newly released barley variety with complete package of practices was demonstrated at farmers' fields.
- The weeds infestation in FLDs was negligible. The barley FLDs crop was free from diseases. New barley variety has good tillering, good crop stand, long earhead, more number of grains per earhead and bold grains. The improved barley variety being popularized was DWRB 137. The check barley variety being used was RD 2552. The neighbour farmers of the barley FLDs were impressed by the performance of new barley variety. The neighbour farmers ask the FLDs farmers for booking new variety seed for the next year.
- No lodging was seen in demonstrations fields. Farmers expected more yield from the new variety than the old varieties. FLD is good source of Transfer of Technology. The farmers appreciated the work done by barley FLDs cooperators.

Monitoring Center: KVK, Bhiwani (Haryana)

Monitoring Date: 09.03.2022

Monitoring Team

Dr. Satyavir Singh, Pr. Scientist & PI (Social Sciences), ICAR-IIWBR, Karnal, Haryana

Mrs. Yogita Bali, DES (Agronomy), KVK, Bhiwani, Haryana

Dr. Meenu, DES (Entomology), KVK, Bhiwani, Haryana

- The Team visited barley FLDs on 9th March, 2022 at village-Dinod, district-Bhiwani (Haryana), conducted by KVK, Bhiwani using varieties DWRB 137 and DWRB 182.

The technology *i.e.* improved or newly released barley variety with complete package of practices was demonstrated at farmers' fields.

- The weeds infestation in FLDs was negligible. The barley FLDs crop was free from diseases. New barley variety has good tillering, good crop stand, long earhead, more number of grains per earhead and bold grains. The improved barley varieties being popularized was DWRB 137 and DWRB 182. The check barley variety being used was BH 393. The neighbour farmers of the barley FLDs were impressed by the performance of new barley variety. The neighbour farmers ask the FLDs farmers for booking new variety seed for the next year.
- No lodging was seen in demonstrations fields. Farmers expected more yield from the new variety than the old varieties. FLD is good source of Transfer of Technology. The farmers appreciated the work done by barley FLDs cooperators.

Monitoring Center: Hisar (Haryana)

Monitoring Date: 10.03.2022

Monitoring Team

Dr. Satyavir Singh, PS & PI (Social Sciences), ICAR-IIWBR, Karnal, Haryana

Dr. Yogender K Gulia, Assist. Sci. (GPB), W&B Section, Deptt of GPB, CCSHAU, Hisar

Dr. K.D. Sehrawat, Assist. Sci. (GPB), Bajra Section, Deptt of GPB, CCSHAU, Hisar

Mr. Ajay Yadav, SMS (Plant Protection), o/o DDA, Hisar, Haryana

Dr. Santosh Kumar Bishnoi, Scientist (GPB), ICAR-IIWBR, RS, Hisar, Haryana

- The Team visited barley FLDs on 10th March, 2022 at village-Pirawali and village Pabara, district-Hisar (Haryana). The barley FLDs were conducted by CCSHAU, Hisar at village Pirawali using varieties DWRB 137. The barley FLDs were conducted by ICAR-IIWBR, Karnal and ICAR-IIWBR, Seed and Research Farm, Hisar at village Pabara, district-Hisar using varieties DWRB 137 and DWRB 182. The technology *i.e.* improved or newly released barley variety with complete package of practices was demonstrated at farmers' fields. A Field day was organised at barley FLDs site in village Pabara, district Hisar.
- The weeds infestation in FLDs was negligible. The barley FLDs crop was free from diseases. New barley variety has good tillering, good crop stand, long earhead, more number of grains per earhead and bold grains. The improved barley varieties being popularized was DWRB 137 and DWRB 182. The check barley variety being used was BH 946 and BH 393. The neighbour farmers of the barley FLDs were impressed by the performance of new barley variety. The neighbour farmers ask the FLDs farmers for booking new variety seed for the next year.

- No lodging was seen in demonstrations fields. Farmers expected more yield from the new variety than the old varieties. FLD is good source of Transfer of Technology. The farmers appreciated the work done by barley FLDs cooperators.

Frontline Demonstrations (FLDs) Monitoring Report of Kanpur, Ayodhya and Mirzapur centers

Monitoring Centre: CSAUAT, Kanpur (UP)

Monitoring Date: 22.03.2022

Monitoring Team

Dr. Anuj Kumar, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)

Dr. J.B. Khan, Wheat Pathologist, Section of Rabi Cereals, CSAUAT, Kanpur (UP)

Dr. A.K. Singh, Assistant Director, Directorate of Sugarcane Development, Lucknow (UP)

Improved or newly released barley variety RD 2907 (5 acre) and DWRB 137 (5 acre) were demonstrated in 10 acres of land at various farmers' fields in Pachpukhra village of Jalalabad block in Kannauj district of Uttar Pradesh. The following observations were made during the overall monitoring and discussion with the beneficiaries of FLD conducted by the CSAUAT, Kanpur Centre.

- Out of 10 beneficiaries (OBC farmers), 5 wheat FLD plots were monitored by the above team.
- As per the site visit of the beneficiaries' field, a majority of the crop was near to maturity stage with evident crop canopy in the demonstrated plots.
- Urea has been applied at the rate of 40 kg per acre.
- The monitored plots were not infested with any weeds, insect-pests and diseases.
- The farmers reported that they have applied 2 irrigations.
- The crop growth was good in the region and they expect 20 quintals yield per acre.
- Farmers valued the demonstrations as the barley variety is new to their region.
- Majority of the FLDs beneficiaries are new cultivators of the crop, they are interested to continue with the barley crop and they reported that it has good demand for fodder.

Monitoring Centre: NDUAT, Ayodhya (UP)

Monitoring Date: 23.03.2022

Monitoring Team

Dr. Anuj Kumar, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)

Dr. A.K. Singh, Junior Agronomist, NDUAT, Ayodhya

Dr. A.K. Singh, Assistant Director, Directorate of Sugarcane Development, Lucknow (UP)

- Improved or newly released barley variety RD 2907 (5 acre) and DWRB 137 (5 acre) were demonstrated in 10 acres of land at various farmers' fields in Jorium, Pithla and Mahulara villages of Milkipur block, Rautawan, Dharauli villages of Amaniganj block, Lakhanpur village of Cholapur block, Bharatpur village of Sikara block, Amihit Village of Kerakat block and Chhatauni village of Paraspur block in Ayodhya district of Uttar Pradesh. The following observations were made during the overall monitoring and discussion with the beneficiaries of FLDs conducted by the NDUAT, Kumarganj, Ayodhya.
- The following observations were made during the overall monitoring and discussion with the beneficiaries of FLDs conducted by the NDUAT, Ayodhya Centre.
- Most of the farmers used broadcasting method against the advised line sowing method.
- In the visited plots, the crop was at early maturity stage.
- Farmers applied recommended doses of NPK and 1-2 irrigations.
- From FLDs, farmers expected the yield around 15-16 quintals per acre.

Monitoring Centre: KVK (BHU), Barkachha, Mirzapur (UP)

Monitoring Date: 24.03.2022

Monitoring Team

Dr. Anuj Kumar, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)

Dr. Sri Ram Singh, Head, KVK, Barkachha, Mirzapur UP

- Improved or newly released barley variety RD 2907 (6 acres) and DWRB 137 (6 acres) were demonstrated in 12 acres of land in villages Belahara, Hardikhurd, Parmapur, Fuliyari of Mirzapur district. The following observations were made during the overall monitoring and discussion with the FLDs beneficiaries.
- Selection of beneficiaries included both male and female farmers, they all belonged to OBC category.
- Crop was ready for harvest.
- In the four visited fields, farmers gave only 1-2 irrigations.
- A majority of the farmers applied only urea at the rate of 100kg/ha.
- From FLDs, farmers expect the yield around 18-20 quintals per acre and they doubt that the ongoing season would yield less than the past season owing to erratic weather.

Frontline Demonstrations (FLDs) Monitoring Report of Rewa, Panna and Tikamgarh centers

Monitoring Centers: Rewa, Panna and Tikamgarh (MP)

Monitoring Date: 22.02.2022 to 27.02.2022

Monitoring Team

Dr. Raj Kumar, Principal Scientist, ICAR -IIWBR, Karnal (Haryana).

Dr. Sumita Singh, SMS, KVK, Rewa (MP).

Dr. Brijesh Tiwari, SMS, KVK, Rewa (MP).

Dr. Ritesh Bagora, Project Associate KVK, Panna (MP).

Dr. S.K. Singh, SMS, KVK, Tikamgarh (MP).

- To demonstrate the performance of newly released feed barley variety DWRB137, notified for NEPZ and CZ of India for timely sown and irrigated condition, twenty four barley frontline demonstrations (FLDs) were allocated to Krishi Vigyan Kendras (KVKs) at Rewa, Panna and Tikamgarh districts of Madhya Pradesh.
- These FLDs on barley variety DWRB 137 were allocated and demonstrated in different villages at farmers' fields under supervision of the KVK Rewa, KVK Panna and KVK Tikamgarh. To monitor the performance of these FLDs, a designated team visited these demonstrations during 22-27 February, 2022. The team member / representative of Crops Division of Department of Agriculture Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, New Delhi could not join the Monitoring Team.
- KVK Rewa conducted all the eight barley FLDs of variety DWRB 137 allocated to them at Nipaniya, Kattar, Satgard, Godha, Atla, Mettori and Ajaraha villages. These FLDs were monitored on 23rd February, 2022 by the monitoring team. These demonstrations were sown during 26th November, 2021 to 10th December, 2021 and the performance of variety was very good.
- KVK Panna was allocated eight barley FLDs of variety DWRB 137. These FLDs were conducted at Janakpur, Barkola, Dagdha, Rajapur, Purushottampur, Ranibagtagra and Tilgunwa villages. These demonstrations were sown during 19-26 November, 2021 and were monitored on 25th February, 2022 by the Monitoring Team.
- KVK Tikamgarh was allocated eight barley FLDs of variety DWRB 137. These FLDs were conducted at Gopalpura Khas, Karmari, Palera Haar, Dargay Kala,

Kurrai, Kumrau Khiriya and Kodiya villages and were sown during 17-21 November, 2021. These FLDs were monitored on 26th February, 2022.

- All the monitored barley FLDs were sown with complete package of practices. Barring a few, most of the laid out FLDs were not at catchy sites; however, their performance was good. Crop was at maturity stage and was ready to be harvested. The farmers were very happy with the performance of this variety over the check barley variety JB 1. The farmers were advised to save their own seed for the next crop season and were trained for the roguing of off-type plants to maintain the quality of farm saved seed.

Frontline Demonstrations (FLDs) and SCSP Wheat Demonstrations Monitoring Report of Ludhiana, Amritsar and Kathua centers

Monitoring Centre: PAU, Ludhiana (Punjab)

Monitoring Date: 02.03.2022

Monitoring Team

Dr. Anil Kumar Khippal, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)

Dr. Vikrant Singh, Directorate of Wheat Development, Gurugram

Dr. Simranjeet Kaur, PAU, Ludhiana

Improved barley varieties DWRB 137 and DWRB 182 were demonstrated at farmers' at multiple locations by the PAU, Ludhiana centre against local check to popularize this variety. The following observations were made during the overall monitoring and discussion with the FLD beneficiaries'.

- The location of FLDs conducted was excellent and was on the main road.
- The board with all information was installed.
- Line sowing by seed drill was the most common practice witnessed in the demonstrated plots with the recommended seed rate.
- Almost all farmers had done seed treatment before taking up sowing.
- Around two to three irrigations were given to the crop amidst scarcity of water.
- The crop stand was good in all the plots.
- Almost all the visited FLD sites were at milking stage.
- Fertilizer nutrients were applied based on the recommended dose for the region and the monitoring team asked the farmers for soil test based application.
- There was no incidence of pests and diseases in the monitored plot.
- Few weeds were present in some visited fields.
- Technical assistance and advisories offered by the centre was much appreciated by the beneficiaries and they are interested to continue.

Monitoring Centre: KVK, Amritsar (Punjab)**Monitoring Date: 03.03.2022****Monitoring Team***Dr. Anil Kumar Khippal, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)**Dr. Vikrant Singh, Assistant director, Directorate of Wheat Development, Gurugram (Haryana)**Dr. Astha, KVK, Amritsar (Punjab)**Dr. Raminder Kaur, KVK, Amritsar (Punjab)*

Improved wheat varieties DBW 187 and DBW 303 were demonstrated at farmers' field against local check to popularize these varieties. The following observations were made during the overall monitoring and discussion with the SC beneficiaries.

- The location of demonstration conducted was excellent.
- The board with all information was installed at the demonstration's site.
- Selection of beneficiaries was only SC farmers.
- Line sowing by seed drill was the most common practice witnessed in the demonstrated plots with the recommended seed rate.
- All the farmers had done seed treatment before taking up sowing.
- Around four to five irrigations were given to the crop.
- The crop stand was good in all the plots.
- Almost all the visited sites were at ear head initiation stage.
- Fertilizer nutrients were applied based on the recommended dose for the region and the monitoring team asked the farmers for soil test based application.
- There was no incidence of pests and diseases in the monitored plot.
- Weeds were not present in the visited fields and herbicide was sprayed to control weeds.
- Technical assistance and advisories offered by the KVK, Amritsar was much appreciated by the beneficiaries and they are interested to continue.

Monitoring Centre: KVK, Kathua (UT of Jammu & Kashmir)**Monitoring Date: 04.03.2021****Monitoring Team***Dr. Anil Kumar Khippal, Principal Scientist, ICAR-IIWBR, Karnal (Haryana)**Dr. Vikrant Singh, Assistant director, Directorate of Wheat Development, Gurugram (Haryana)**Dr. Berjesh Ajrawat, KVK, Kathua (UT of Jammu & Kashmir)**Dr. Raju Mahjan, District Agriculture Officer, Kathua (UT of Jammu & Kashmir)*

Improved barley variety RD 2907 was demonstrated at farmers' fields by the KVK, Kathua centre against local check to popularize this variety. The following observations were made during the overall monitoring and discussion with the FLD beneficiaries.

- The location of FLDs conducted was good.
- The board with all information was installed at the FLD site.

- The beneficiaries belong to general category except two farmers who belong to SC category.
- All the demonstrations were timely sown.
- Line sowing by seed drill was the most common practice witnessed in the demonstrated plots with the recommended seed rate.
- Few farmers had done seed treatment before taking up sowing.
- The crop stand was good in all the plots.
- Almost all the visited FLD sites were at ear head stage.
- Fertilizer nutrients were applied based on the recommended dose for the region and the monitoring team asked the farmers for soil test based application.
- Few weeds were present in some visited fields and no herbicide was sprayed.
- Technical assistance and advisories offered by the KVK Kathua was much appreciated by the beneficiaries and they are interested to continue.

Wheat Demonstrations Conducted Under SCSP Programme During 2021-2022

Under SCSP Programme, 250 varietal demonstrations of wheat varieties DBW 187 and DBW 303 were organized during 2021-22 *rabi* crop season to assess their performance at farmers' field. The demonstrations were carried out through KVKs of Punjab (18), Haryana (4), Rajasthan (2) and Jammu & Kashmir (1) benefitting 250 farmers (Table 17). The demonstrations were conducted in 18 aspirational districts of Punjab (Amritsar, Barnala, Bathinda, Faridkot, Fatehgarh, Firozpur, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Muktsar Sahib, Rupnagar, Sangrur, Nawanshahar and Tarn Taran), 4 aspirational districts of Haryana (Ambala, Fatehabad, Sirsa and Yamunanagar), 2 aspirational districts of Rajasthan (Sriganganagar and Hanumangarh) and 1 aspirational district of UT of Jammu & Kashmir (Samba) covering a total of 250 acres area and 250 farmers of Scheduled Castes (SC) category. In Punjab, the demonstrations were conducted in 180 acres area benefitting 180 SC farmers; in Haryana, the demonstrations were conducted in 40 acres area benefitting 40 SC farmers; in Rajasthan, the demonstrations were conducted in 20 acres area benefitting 20 SC farmers; in J&K (UT), the demonstrations were conducted in 10 acres area benefitting 27 SC farmers (Table 18). In each aspirational district, 10 demonstrations were conducted. At all the locations, the yields of demonstrated varieties were more than the check varieties. Improved wheat varieties DBW 187 and DBW 303 with complete package of practices (irrigation management, nutrient management, weed control, seed treatment etc.) were demonstrated.

Table 17: District wise distribution of wheat demonstrations under SCSP programme during 2021-22

S.No.	State and District	Demonstrations conducted	Area sown (acres)	Number of farmers
Punjab				
1.	Amritsar	10	10	10
2.	Barnala	10	10	10
3.	Bathinda	10	10	10
4.	Faridkot	10	10	10
5.	Fatehgarh	10	10	10
6.	Firozpur	10	10	10
7.	Gurdaspur	10	10	10
8.	Hoshiarpur	10	10	10
9.	Jalandhar	10	10	10
10.	Kapurthala	10	10	10

11.	Ludhiana	10	10	10
12.	Mansa	10	10	10
13.	Moga	10	10	10
14.	Muktsar Sahib	10	10	10
15.	Rupnagar	10	10	10
16.	Sangrur	10	10	10
17.	SBS Nagar (Nawanshahar)	10	10	10
18.	Tarn Taran	10	10	10
Haryana				
19.	Ambala	10	10	10
20.	Fatehabad	10	10	10
21.	Sirsa	10	10	10
22.	Yamunanagar	10	10	10
Rajasthan				
23.	Sriganganagar	10	10	10
24.	Hanumangarh	10	10	10
Jammu & Kashmir (UT)				
25.	Samba	10	10	27
Total		250	250	267

Table 18: State wise distribution of wheat demonstrations under SCSP programme during 2021-22

Zone and State	Demonstrations conducted	Area sown (acres)	Number of farmers
Punjab	180	180	180
Haryana	40	40	40
Rajasthan	20	20	20
Jammu & Kashmir	10	10	27
Overall (North Western Plains-NWPZ)	250	250	267

Table 19: District wise yield gain in wheat demonstrations under SCSP programme for 2021-22

State and District	Wheat demonstrations yield (q/ha)	Check yield (q/ha)	Gain (%)
Punjab			
Amritsar	52.18	49.30	05.83***
Barnala	51.05	43.90	16.29**
Bathinda	50.88	46.75	08.82***
Faridkot	46.48	44.23	05.09***
Fatehgarh	39.75	36.25	09.66***
Firozpur	46.48	44.53	04.38***
Gurdaspur	47.28	44.08	07.26**
Hoshiarpur	39.60	38.90	01.80 ^{NS}

Jalandhar	49.85	46.28	07.73**
Kapurthala	46.80	43.20	08.33***
Ludhiana	45.85	43.95	04.32 ^{NS}
Mansa	46.15	42.50	08.59 ^{NS}
Moga	46.58	41.28	12.84***
Muktsar Sahib	51.63	49.05	05.25**
Rupnagar	43.13	41.25	04.55***
Sangrur	52.90	48.75	08.51 ^{NS}
Nawanshahar	49.08	45.40	08.09***
Tarn Taran	45.18	42.00	07.56***
Haryana			
Ambala	33.80	28.95	16.75 ^{NS}
Fatehabad	58.13	48.25	20.47***
Sirsa	55.00	47.75	15.18***
Yamunanagar	45.38	42.13	07.72***
Rajasthan			
Sriganganagar	47.50	39.60	19.95***
Hanumangarh	40.73	34.38	18.47**
Jammu & Kashmir			
Samba	38.45	18.90	103.44***

*** Significant at 1 per cent level, ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

The yield gain due to improved variety under SCSP wheat demonstrations was highest in Fatehabad (20.47%) district in Haryana state followed by Sriganganagar (19.95 %) district in Rajasthan state. The lowest yield gain was in Ferozpur (04.38 %) district in Punjab state (Table 19).

Table 20: State wise yield gain in wheat demonstrations under SCSP programme during 2021-22

State and Zone	Wheat demonstrations yield (q/ha)	Check yield (q/ha)	Gain (%)
Punjab	46.85	43.48	07.76***
Haryana	48.08	41.78	15.08***
Rajasthan	44.13	36.98	19.34***
Jammu & Kashmir	38.45	18.90	103.44***
Overall(North Western Plains-NWPZ)	46.53	41.88	11.10***

*** Significant at 1 per cent level ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

Under SCSP wheat demonstrations, the yield gain was highest *i.e.* 103.44 % in Jammu & Kashmir (UT). The lowest yield gain was 07.76 % in Punjab state. The zonal (NWPZ) yield gain was 11.10 % (Table 20). Due to sudden rise in temperature during second week of

March 2022, the expected yields were not realized for both the varieties. Even then, they outperformed the existing varieties.

Table 21: Varietal performance in wheat demonstrations under SCSP programme during 2021-22

State and Centre	Improved variety	Improved variety mean yield (q/ha)	Check variety	Check variety mean yield (q/ha)	Yield gain over check (%)
Punjab					
Amritsar	DBW 187	51.10	HD 2967	49.50	3.23**
Amritsar	DBW 187	51.65	HD 3086	48.50	6.49**
Amritsar	DBW 187	51.28	PBW 677	49.00	4.65 ^{NS}
Amritsar	DBW 303	54.18	PBW 725	49.83	8.73***
Barnala	DBW 187	45.75	HD 2967	44.88	1.95 ^{NS}
Barnala	DBW 187	53.60	HD 3086	46.58	15.08 ^{NS}
Barnala	DBW 303	47.63	HD 2967	41.13	15.81 ^{NS}
Barnala	DBW 303	54.30	HD 3086	42.40	28.07 ^{NS}
Bathinda	DBW 187	50.95	HD 3086	47.10	8.17***
Bathinda	DBW 303	50.80	HD 3086	46.40	9.48***
Faridkot	DBW 187	45.55	HD 3086	44.05	3.41**
Faridkot	DBW 303	47.88	HD 3086	44.50	7.58**
Fatehgarh	DBW 187	41.13	PBW 677	37.00	11.15***
Fatehgarh	DBW 303	37.98	HD 2967	34.70	9.44**
Fatehgarh	DBW 303	38.75	HD 3086	37.50	3.33 ^{NS}
Fatehgarh	DBW 303	41.25	PBW 725	40.00	3.13 ^{NS}
Firozpur	DBW 187	46.58	HD 3086	44.60	4.43**
Firozpur	DBW 303	46.40	HD 3086	44.45	4.39**
Gurdaspur	DBW 187	47.68	PBW 725	44.93	6.12 ^{NS}
Gurdaspur	DBW 303	47.10	PBW 725	43.73	7.72*
Hoshiarpur	DBW 187	37.25	HD 3086	35.25	5.67 ^{NS}
Hoshiarpur	DBW 187	35.75	PBW 677	35.75	0.00 ^{NS}
Hoshiarpur	DBW 187	36.75	PBW 725	36.50	0.68 ^{NS}
Hoshiarpur	DBW 187	39.50	PBW 723	39.25	0.64 ^{NS}
Hoshiarpur	DBW 303	40.38	HD 3086	38.75	4.19 ^{NS}
Hoshiarpur	DBW 303	40.38	PBW 725	40.13	0.62 ^{NS}
Hoshiarpur	DBW 303	42.63	PBW 766	42.25	0.89 ^{NS}
Jalandhar	DBW 303	48.75	HD 3086	43.75	11.43 ^{NS}
Jalandhar	DBW 303	49.63	PBW 725	48.13	3.12 ^{NS}
Jalandhar	DBW 303	50.00	PBW 766	49.25	1.52 ^{NS}
Jalandhar	DBW 187	50.00	HD 3086	41.25	21.21 ^{NS}
Jalandhar	DBW 187	50.00	PBW 725	43.75	14.29 ^{NS}
Jalandhar	DBW 187	52.13	PBW 766	49.25	5.84 ^{NS}
Jalandhar	DBW 187	47.50	PBW 723	46.25	2.70 ^{NS}
Kapurthala	DBW 303	47.25	DBW 187	47.00	0.53 ^{NS}
Kapurthala	DBW 303	46.25	HD 3086	42.00	10.12 ^{NS}
Kapurthala	DBW 303	46.25	PBW 725	40.50	14.20 ^{NS}
Kapurthala	DBW 303	48.50	PBW 869	48.00	1.04 ^{NS}
Kapurthala	DBW 303	46.50	WH 1105	43.25	7.51 ^{NS}
Kapurthala	DBW 187	46.75	HD 2967	43.00	8.72 ^{NS}
Kapurthala	DBW 187	46.13	PBW 725	40.88	12.84**
Kapurthala	DBW 187	47.00	Shriram 272	42.25	11.24 ^{NS}

State and Centre	Improved variety	Improved variety mean yield (q/ha)	Check variety	Check variety mean yield (q/ha)	Yield gain over check (%)
Kapurthala	DBW 187	47.25	PBW 723	44.75	5.59 ^{NS}
Ludhiana	DBW 303	46.18	HD 3086	43.33	6.58 ^{NS}
Ludhiana	DBW 303	42.00	PBW 725	41.25	1.82 ^{NS}
Ludhiana	DBW 303	49.50	PBW 677	49.50	0.00 ^{NS}
Ludhiana	DBW 187	47.00	PBW 766	46.75	0.53 ^{NS}
Ludhiana	DBW 187	47.50	HD 3086	43.50	9.20*
Ludhiana	DBW 187	43.25	PBW 725	42.50	1.76 ^{NS}
Mansa	DBW 303	50.25	HD 2967	46.50	8.06 ^{NS}
Mansa	DBW 187	42.50	HD 2967	40.00	6.25 ^{NS}
Mansa	DBW 303	53.00	HD 3086	46.00	15.22 ^{NS}
Mansa	DBW 187	40.83	HD 3086	37.68	8.36 ^{NS}
Moga	DBW 187	46.65	HD 3086	41.08	13.57 ^{***}
Moga	DBW 303	46.53	HD 3086	41.48	12.18 ^{***}
Muktsar Sahib	DBW 187	52.00	DBW 222	51.00	1.96 ^{NS}
Muktsar Sahib	DBW 187	52.00	HD 3086	49.00	6.12 ^{NS}
Muktsar Sahib	DBW 187	49.50	PBW 766	49.00	1.02 ^{NS}
Muktsar Sahib	DBW 303	52.50	PBW 766	47.50	10.53 ^{NS}
Muktsar Sahib	DBW 187	50.00	PBW 803	48.00	4.17 ^{NS}
Muktsar Sahib	DBW 303	52.58	PBW 803	49.50	6.21 ^{NS}
Rupnagar	DBW 187	42.50	DBW 222	42.50	0.00 ^{NS}
Rupnagar	DBW 187	42.93	PBW 725	40.83	5.14 ^{**}
Rupnagar	DBW 187	43.75	PBW 723	41.25	6.06 ^{NS}
Rupnagar	DBW 303	43.13	DBW 187	41.88	2.99 ^{NS}
Rupnagar	DBW 303	45.00	DBW 222	43.75	2.86 ^{NS}
Rupnagar	DBW 303	41.25	PBW 677	37.50	10.00 ^{NS}
Rupnagar	DBW 303	43.75	PBW 725	41.25	6.06 ^{NS}
Sangrur	DBW 187	54.00	HD 3086	49.50	9.09 ^{NS}
Sangrur	DBW 303	51.78	HD 3086	48.00	7.86 ^{NS}
Nawanshahar	DBW 187	49.40	PBW 723	46.10	7.16 ^{**}
Nawanshahar	DBW 303	48.75	PBW 723	44.70	9.06 ^{NS}
Tarn Taran	DBW 187	45.30	PBW 766	43.35	4.50 ^{NS}
Tarn Taran	DBW 303	45.05	PBW 766	40.65	10.82 ^{***}
Haryana					
Ambala	DBW 187	32.80	HD 3086	25.50	28.63 ^{NS}
Ambala	DBW 303	34.80	HD 3086	32.40	7.41 ^{NS}
Fatehabad	DBW 187	57.50	HD 2967	45.63	26.03 ^{NS}
Fatehabad	DBW 187	56.70	HD 3086	49.08	15.54 ^{***}
Fatehabad	DBW 303	59.38	HD 2967	47.50	25.00*
Fatehabad	DBW 303	59.38	HD 3086	50.00	18.75 ^{**}
Sirsa	DBW 187	50.00	HD 2851	46.25	8.11 ^{NS}
Sirsa	DBW 187	50.83	HD 3086	48.33	5.17 ^{NS}
Sirsa	DBW 303	59.50	HD 3086	48.00	23.96 ^{***}
Yamunanagar	DBW 187	44.08	HD 3086	41.88	5.25*
Yamunanagar	DBW 187	43.75	HD 2967	42.50	2.94 ^{NS}
Yamunanagar	DBW 303	47.08	HD 2967	42.08	11.88*
Yamunanagar	DBW 303	46.25	HD 3086	42.50	8.82 ^{NS}

State and Centre	Improved variety	Improved variety mean yield (q/ha)	Check variety	Check variety mean yield (q/ha)	Yield gain over check (%)
Rajasthan					
Sriganganagar	DBW 187	50.60	HD 3086	40.90	23.72***
Sriganganagar	DBW 303	44.40	HD 3086	38.30	15.93***
Hanumangarh	DBW 187	42.25	HD 3086	34.75	21.58*
Hanumangarh	DBW 303	39.20	HD 3086	34.00	15.29 ^{NS}
UT of Jammu & Kashmir					
Samba	DBW 187	39.00	HD 2967	18.13	115.17***
Samba	DBW 303	37.90	HD 2967	19.00	99.47***

*** Significant at 1 per cent level, ** Significant at 5 per cent level, * Significant at 10 per cent level, NS is Non-significant

In Haryana state, the significant yield gain due to improved wheat variety DBW 303 over check mean yield was highest at Fatehabad (25.00%). In Punjab state, the highest significant yield gain due to improved wheat variety DBW 187 was at Moga (13.57%). In Rajasthan state, the highest significant yield gain due to improved wheat variety DBW 187 was at Sriganganagar (23.72). In J&K (UT), the highest significant yield gain due to improved wheat variety DBW 187 was at Samba (115.47%) (Table 21).

Table 22: Highest yield of wheat varieties DBW 303 and DBW 187 under wheat demonstrations

State and Zone	District	Variety	Yield(q/ha)
Punjab	Barnala	DBW 303	61.50
Punjab	Sangrur	DBW 187	60.00
Haryana	Fatehabad	DBW 303	61.25
Haryana	Fatehabad	DBW 187	60.00
Rajasthan	Hanumangarh	DBW 303	48.00
Rajasthan	Hanumangarh	DBW 187	52.00
UT of J&K	Samba	DBW 303	40.00
UT of J&K	Samba	DBW 187	46.25

In Punjab, the highest yield of variety DBW 303 was 61.50 q/ha in Barnala district. In Haryana, the highest yield of variety DBW 303 was 61.25 q/ha in Fatehabad district. In Rajasthan, the highest yield of variety DBW 187 was 52.00 q/ha in Hanumangarh district. In UT of Jammu & Kashmir, the highest yield of variety DBW 187 was 46.25 q/ha in Samba district (Table 22).

Table 23: Improved and check wheat varieties at farmers' field in Punjab and Haryana during rabi 2021-22

State	Improved varieties	Check varieties
Punjab	DBW 303, DBW 187	HD 3086, HD 2967, DBW 187, DBW 222, PBW 725, PBW 723 (Unnat PBW 343), PBW 677, PBW 766, PBW 803, WH 1105, Sriram 272
Haryana	DBW 303, DBW 187	HD 3086, HD 2967, HD 2851,
Rajasthan	DBW 303, DBW 187	HD 3086
UT of J&K	DBW 303, DBW 187	HD 2967

Costs and Returns for SCSP Wheat Demonstrations and Barley FLDs vis-à-vis Check Plots

Profitability is one of the major factors influencing the adoption of any crop production technology. In this section, costs and returns analysis for wheat demonstrations under the SCSP programme and barley frontline demonstrations (FLDs) have been attempted across regions for the improved production technologies that were tested in the farmers' field during the 2021-2022 *Rabi* season. Generally, in any economic study, total costs are discussed under two categories *viz.*, variable costs and fixed costs, the widely adopted norm. Nevertheless, variable costs alone are reckoned to be the cost incurred by the farmers ignoring the fixed costs. In any economic analysis of farm business, the fixed costs should also be taken into consideration to arrive at total costs for computing the net income. However, in the present analysis only operational or variable costs were considered to know the profitability of technology adoption with the assumption of fixed costs remain the same for the particular farm wherein the technology (or variety) has been demonstrated. Operational costs include expenditure incurred on labour, seeds, manure, fertilizers, plant protection chemicals, *etc.* The returns over variable costs give an idea of profitability accrued to the farmer after meeting all the day-to-day expenses. Cost of production was estimated to know the cost incurred in producing a unit quantity of crop output *i.e.*, ₹ per quintal. Returns per rupee of investment were also worked out to know the comparative profitability between wheat and barley.

Primary data were collected by the cooperating centres from the selected farmers who were allotted the FLDs. For wheat demonstrations conducted under the SCSP programme, the data were collected by the KVKs of the respective states. The personal interview and discussion method were adopted with the aid of pre-tested schedules designed exclusively for the purpose of evaluating the technologies disseminated through wheat demonstrations and barley FLDs. The data collected pertained to the *Rabi* season 2021-2022. The communicated data were compiled and processed at the ICAR-Indian Institute of Wheat and Barley Research for further analysis and reporting. Every genuine effort was made by the coordinators to collect realistic data from the wheat demonstrations and barley FLD beneficiaries and inappropriate data reported from the cooperating centres/delayed reporting were not included in the costs and returns analysis.

Costs and Returns for Wheat (Demonstrations vis-à-vis Check Plot)

A perusal of Table 24 indicates that on an average, demonstration of improved wheat varieties at the farmers' field under the SCSP programme gave ₹3.90 per rupee of investment in comparison to the farmers' practice (₹3.35). A significant difference in returns per rupee of investment was noticed between the demonstrated and check plots at the farmer's field. The profit per hectare in the demonstrated plot was highest in Rajasthan (₹91634), followed by Punjab (₹90401). The difference in profit levels between demonstration and check plots was highest in the case of Jammu & Kashmir. Operational costs were found to be marginally lower in wheat demonstrations in comparison to the check plots. Overall, by adopting a new wheat variety, a farmer earns a profit of ₹88810/ha in the NWPZ. Further, ₹690 has to be spent to produce a quintal of wheat through a new variety against ₹829 (farmers' choice of variety in the check plots).

Table 24: Costs and returns from the wheat during 2021-22

Particulars	Cost of Cultivation (₹/ha)						Returns per ₹ invested		Cost of Production (₹/Qtl)	
	Operational Costs		Gross Returns		Profit		Demonstration	Farmers Practice	Demonstration	Farmers Practice
	Demonstration	Farmers Practice	Demonstration	Farmers Practice	Demonstration	Farmers Practice				
State										
Haryana	38090	39165	118933	103769	80843	64604	3.12	2.65	934	1090
Jammu & Kashmir	37346	42262	119597	60120	82251	17858	3.20	1.42	934	1088
Punjab	28953	30578	119354	110975	90401	80397	4.12	3.63	923	1078
Rajasthan	29366	28026	121000	101967	91634	73941	4.12	3.64	901	1059
Zone										
NWPZ	30612	32061	119421	107436	88810	75374	3.90	3.35	690	829
Technology										
Improved Variety	30612	32061	119421	107436	88810	75374	3.90	3.35	690	829
All Categories										
India	30612	32061	119421	107436	88810	75374	3.90	3.35	690	829

Costs and Returns for Barley (FLDs vis-à-vis Check Plot)

Table 25 indicates that on average, improved barley varieties demonstrated at the farmers' field under the FLD programme gave around ₹71423 profit per hectare. A significant difference in returns per rupee of investment was noticed between the demonstration and check plots across states and zones.

Table 25: Costs and returns from barley during 2021-22

Particulars	Cost of Cultivation (₹/ha)						Returns per ₹invested		Cost of Production (₹/Qtl)	
	Operational Costs		Gross Returns		Profit					
	FLD	Check	FLD	Check	FLD	Check	FLD	Check	FLD	Check
State										
Haryana	33746	31901	136198	125897	102452	93996	4.04	3.95	783	792
Himachal Pradesh	32110	31616	78251	61664	46141	30048	2.44	1.95	786	799
Madhya Pradesh	45915	44468	85470	63301	39555	18833	1.86	1.42	786	804
Punjab	25932	27270	85460	77225	59528	49955	3.30	2.83	786	806
Rajasthan	38178	37672	157200	133758	119022	96086	4.12	3.55	787	811
Uttar Pradesh	35271	34183	109736	91001	74465	56819	3.11	2.66	787	815
UT of J&K	29023	24106	91752	55333	62730	31227	3.16	2.30	784	818
Zone										
CZ	41606	40559	102155	79616	60550	39056	2.46	1.96	1061	1343
NEPZ	32472	31025	75300	61422	42828	30397	2.32	1.98	1062	1346
NHZ	32110	31616	78251	61664	46141	30048	2.44	1.95	1061	1344
NWPZ	32745	31750	125062	106810	92317	75060	3.82	3.36	1058	1338
Technology										
Improved Variety	34932	33907	106355	87850	71423	53943	3.04	2.59	929	1112
All Categories										
India	34932	33907	106355	87850	71423	53943	3.04	2.59	929	1112

Rajasthan registered the highest returns per rupee of investment (₹4.12) through demonstrations, followed by Haryana (₹4.04) and Punjab (₹3.30). The difference in returns per rupee of investment between demonstration and check plots was highest in UT of J&K, followed by Rajasthan and Himachal Pradesh. The profit per hectare in FLDs was highest in Rajasthan (₹119022), followed by Haryana (₹102452) and Uttar Pradesh (₹74465). The difference in profit between FLD and check plots ranged from ₹31503 in UT of J&K to ₹8456 in Haryana. Interestingly, operational costs in Punjab were lower in FLDs than in check plots. The probable reason might be a reduction in the use of inputs based on the recommendation. The returns per rupee of investment across barley growing zones were highest in the NWPZ (₹3.82), followed by CZ (₹2.46) and NHZ (₹2.44). Estimates of the cost of production indicated that the cost incurred in producing a unit quantity of barley output was the least (₹783 per quintal) in Haryana owing to relatively less operational costs coupled with increased yield levels.

Overall, the profit analysis on wheat and barley indicated that the additional returns per hectare from the demonstrated varieties and/or technologies were more than the check varieties and/or technologies establishing the fact that demonstrations carry the successful technologies from lab to land. For some beneficiaries, it was found that the

operational costs under check varieties were more than the demonstrations/FLDs. However, the present estimates are only the indicators for comparison within the current year's *Rabi* season (2021-2022) and may not have a complete inter-year relevance as the demonstrations (improved varieties were different across regions) were conducted at different sites as well as by different farm households. Further, the difference in profit earned from wheat/barley cultivation is subject to farm-farmer-region specific conditions as it varies from case to case.

Technology Outreach Programme (2021-22)

Mera Gaon Mera Gaurav Scheme at ICAR-IIWBR, Karnal

The activities of the governments flagship programme towards doubling of farmers' income under 'Mera Gaon Mera Gaurav' (MGMG) scheme were carried out on large scale during the current crop season and all the teams advised and created awareness among the farmers on advanced practices of crop cultivation. Conducted barley frontline demonstrations (FLDs) at farmers' fields at Hisar. Timely reports of monthly and quarterly activities were compiled at IIWBR and submitted to the Zonal Nodal Officer & Director, ICAR- Agricultural Technology Application Research Institute (ATARI), Zone-2, Jodhpur (Rajasthan), regularly. Fourteen MGMG teams of scientists of different disciplines have been constituted at ICAR-IIWBR, Karnal including four to five scientists. Out of these, each of the twelve MGMG teams have selected five different villages, one team has selected four different villages and one team has selected one village.

Extension Activities

Training programmes organized/conducted by ICAR-IIWBR, Karnal

S.No.	Date	Duration (days)	No. of Trainees	Subject	Organized by
1.	5-6 October, 2021 13-14 October, 2021 1-2 November, 2021 15 November, 2021 25-26 November, 2021 1 & 3 December, 2021 15-16 December, 2021	1 Day each (8 Days)	1000 farmers from Rajasthan and Haryana	Eight online training programmes were organised on various aspects of Malt Barley Cultivation	ICAR-IIWBR, Karnal and ABInBev Industries Gurugram, Haryana
2.	1-10 September, 2021	10	63 Participants	Effective Extension Methods for Upscaling and Outscaling of Wheat and Barley Production Technologies	ICAR-IIWBR, Karnal and Extension Education Institute (EEI), Nilokheri, Karnal
3.	4 September, 2021	1	75 Farmers	Goshthi and Exhibition on 'Food and Nutrition for Farmers: Women Self Help Group Efforts' at KVK, Tepla, Ambala.	ICAR-IIWBR, Karnal and KVK, Tepla, Ambala.

4.	17 September, 2021	1	80 Girls & Women	'Nutri-Food Function involving Girls' at KVK, Tepla, Ambala.	ICAR-IIWBR, Karnal and KVK, Tepla, Ambala.
5.	23-25 November, 2021	3	56 Farmers	Uttarakhand mein gehoon evam jau ki unnat kheti	ICAR-IIWBR and Project Director, ATMA, Dehradun, Uttarakhand
6.	30 November – 02 December 2021	3	15 Farmers	Uttarakhand mein gehoon evam jau ki unnat kheti	ICAR-IIWBR and Project Director, ATMA Nainital, Uttarakhand
7.	6-8 December, 2021	3	21 Farmers	Uttarakhand mein gehoon evam jau ki unnat kheti	ICAR-IIWBR and Project Director, ATMA Chamoli, Uttarakhand
8.	6-8 December, 2021	3	34 Farmers	Uttarakhand mein Gehoon evam Jau ki unnat kheti	ICAR-IIWBR and Project Director, ATMA Haridwar, Uttarakhand
9.	18 December, 2021	1	140 students	Cleanliness and Sanitation Drive in MGMG village Raipur Jattan under Swachhata Pakhwada	ICAR-IIWBR, Karnal
10.	21 February, 2022	1	40	Training on rouging of wheat seed plots at seed village Phurlak.	ICAR-IIWBR, Karnal
11.	23 February, 2022	1	20 Farmers	Gehoon utpadan se labh.	Ayurvet Foundation
12.	25 March, 2022	1	100	Training in Agricultural Practices/Farmers-Scientists Interaction Workshop at KVK, Noormahal, Jalandhar under SCSP programme.	ICAR-IIWBR, Karnal and KVK, Noormahal, Jalandhar
13.	30 March, 2022	1	40	Monitoring and training on rouging of wheat seed plots at seed village Phurlak.	ICAR-IIWBR, Karnal

Attachment training

S.No.	Name of the training Programme	Participant	Duration
1	Student Ready Programme for B.Sc. (Agri.) final year student for Institute of Agricultural Sciences, BHU, Varanasi (UP)	01	25 days (1-24 September, 2021)

Organisation of Kisan Mela/Farmers Day/Field Day/Foundation Day etc.

S.No.	Date	Subject	Organized by
1.	06 April, 2021	Field Day at barley FLD site, village Hajwana, Kaithal	ICAR-IIWBR, Karnal
2.	18 June, 2021	Farmers Awareness Campaign on balanced use of fertilizers in virtual mode	ICAR-IIWBR, Karnal
3.	12 October, 2021	Apshisht se khushahaali at village Kunjpura, Karnal	ICAR-IIWBR, Karnal
3.	15 October, 2021	MahilaKisanDiwas	ICAR-IIWBR, Karnal
4.	16 October, 2021	World Food Day	ICAR-IIWBR, Karnal
5.	26 October, 2021	Awareness Camp/Training Programme at Village Mabong, district West Sikkim, Sikkim	ICAR-IIWBR, Karnal and KVK, West Sikkim

6.	28 October, 2021	Awareness Camp/Training Programme at Village Karji, district West Sikkim, Sikkim	ICAR-IWBR, Karnal and KVK, West Sikkim
7.	26 November, 2021	70 th Constitution Day	ICAR-IWBR, Karnal
8.	3 December, 2021	Agriculture Education celebrated at ICAR-IWBR, Karnal	ICAR-IWBR, Karnal
9.	5 December, 2021	World Soil Day at Phurlak village, Karnal	ICAR-IWBR, Karnal
10.	18 December, 2021	Cleanliness and sanitation drive in village Raipur Jattan under Sawachchhata Pakhwara.	ICAR-IWBR, Karnal
11.	23 December, 2021	National Farmers Day	ICAR-IWBR, Karnal
12.	24 January, 2022	National Girl Child Day (Virtual mode)	ICAR-IWBR, Karnal
13.	09 February, 2022	Foundation Day, ICAR-IWBR, Karnal.	ICAR-IWBR, Karnal
14.	08 March, 2022	International Women Day	ICAR-IWBR, Karnal
15.	10 March, 2022	Field day at Barley FLD site in village Pabra, Hisar, Haryana	ICAR-IWBR, Karnal
16.	15 March, 2022	Interface Meeting with stakeholders for popularization of institute technologies under SCSP and TSP programme	ICAR-IWBR, Karnal
17.	26 March, 2022	Field day at Wheat Demonstration site in village Bundala, Jalandhar, Punjab, under SCSP programme.	ICAR-IWBR, Karnal and KVK, Jalandhar, Punjab

Organized/participation in exhibitions

S. No.	Programme	Date	Duration (Days)	Organized by
1.	Goshthi and Exhibition	27 September, 2021	1	ICAR-IWBR at ICAR-IWBR, Regional Station, DalangMaidan, Lahaul&Spiti, Himachal Pradesh under the TSP Project.
2.	Kisan Mela-2021	05 October, 2021	1	ICAR-CSSRI, Karnal at village Habri, Kaithal, Haryana
3	Interface Meeting with Stakeholders for popularization of institute technologies under SCSP and TSP programme	15 March, 2022	1	ICAR-IWBR, Karnal

Coordination of visits at ICAR-IWBR, Karnal during 2021-22

Sr.No.	Date of visit	Number of visitors	From
1.	5 April, 2021	25 Farmers	Kaithal, Haryana
2.	16 September, 2021	100 Farmers	Karnal, Haryana
3.	16 September, 2021	100 Farmers	Karnal, Haryana
4.	17 September, 2021	150 Farmers	Asandh, Karnal
5.	17 September, 2021	100 Farmers	Gheer, Karnal
6.	21 September, 2021	100 Farmers	GharhiBirbal, Indri, Haryana
7.	21 September, 2021	100 Farmers	Biana, Indri, Haryana
8.	22 September, 2021	100 Farmers	Nishing, Haryana
9.	22 September, 2021	100 Farmers	Nishing, Haryana
10.	24 September, 2021	58 Farmers	Asandh, Haryana
11.	29 September, 2021	50 Supervisor	Nilokheri, Haryana
12.	30 September, 2021	100 Farmers	Nilokheri, Haryana
13.	01 October, 2021	100 Farmers	Nilokheri, Haryana
14.	23 October, 2021	50 Farmers	Patan, Gujrat
15.	17 November, 2021	50 Farmers	Anand, Gujarat
16.	26 November, 2021	39 Students from Govt. School	Biana, Karnal

17.	26 November, 2021	68 Students from Govt. School	Samora, Karnal
18.	29 November, 2021	45 Students from Govt. School	Rajpura, Punjab
19.	03 December, 2021	50 Students from Govt. School	Kutail, Karnal
20.	09 December, 2021	58 Students from Govt. School	Subri, Karnal
21.	13 December, 2021	48 Farmers	Vadodara, Gujarat
22.	18 December, 2021	46 Farmers	Vadodara, Gujarat
23.	18 December, 2021	30 Farmers	Alwar, Rajasthan
24.	28 December, 2021	50 Students from Govt. School	Kaithal, Haryana
25.	28 December, 2021	50 Students	Karora, Kaithal, Haryana
26.	29 December, 2021	41 Farmers	Bharuch, Gujarat
27.	16 February, 2022	8 Students	Safidon, Jind, Haryana
28.	21 February, 2022	18 Farmers	KVK, Tepla, Ambala
29.	22 February, 2022	25 Farmers	Baghpat, Uttar Pradesh
30.	22 February, 2022	20 Trainees	EEl, Nilokhedi, Karnal, Haryana
31.	26 February, 2022	43 Farmers	Dwarika, Gujarat
32.	26 February, 2022	20 SMS/Officers	BAU, Sabour
33.	05 March, 2022	50 Farmers	Dahod, Gujarat
34.	11 March, 2022	46 Farmers	Junagarh, Gujarat
35.	11 March, 2022	47 Farmers	Ahmedabad, Gujarat
36.	12 March, 2022	50 Farmers	Kheda, Gujarat
37.	12 March, 2022	24 Farmers	Mirzapur, Uttar Pradesh
38.	13 March, 2022	12 Farmers	Bhadohi, Uttar Pradesh
39.	23 March, 2022	43 Farmers	Amethi, Uttar Pradesh
40.	24 March, 2022	31 Students	RLBCAU, Jhansi, Uttar Pradesh
41.	24 March, 2022	40 Farmers	SomnathGiri, Gujarat
42.	26 March, 2022	48 Farmers	Maharajganj, Uttar Pradesh

Lectures delivered

Date	Topic
Dr Anuj Kumar	
09.06.2021	“Effective methods for faster diffusion of innovations in agriculture” in an online training programme on “Interactive approaches for diffusion of technology” from 8-11 June, 2021 at EEI, Nilokheri.
09.06.2021	“Stress management of employees in face of COVID 19” during a two days training programme (8-9 September, 2021) organized by CSSRI, Karnal on “Effective health management for enhancing work efficiency of ICAR employee”.
21.06.2022	“Modern presentation skills for transfer of technology” during five days training programme (21-25 June, 2021) on communication and presentation skills for transfer of technology at EEI, Nilokheri.
23.06.2021	Delivered online lecture on “Modern presentation skills for transfer of technology” in a training programme organized by EEI, Nilokheri.
14.07.2021	“Effective writing for farm innovations” during a five days (13-17 July, 2021) online training programme at EEI Nilokheri.
14.07.2021	“Monitoring and evaluation of groups” during a three days (12-14 July, 2021) training programme on “Group mobilization and team building” organized by SAMETI, Mashobra, Shimla, HP.
27.07.2021	“Formation of FPO/SHG for agribusiness” during four days (27-30 July, 2021) training programme on “Technological interventions for rural entrepreneurship and farmers’ prosperity in eastern India. Organized by ICAR-IIWBR, Karnal
28.07.2021	“Course planning and preparations” during a 5 days training programme on “Training management skills for extension functionaries” by EEI, Nilokheri.
19.08.2021	“Role of cost-benefit analysis in monitoring and evaluation of extension programmes” during a five days (17-21 August, 2021) training programme at EEI, Nilokheri.

26.08.2021	“Food and nutrition for farmers” in Azadi ka amrit mahotsava lecture series organized by NBAGR, Karnal.
27.08.2021	Indicators for entrepreneurship development” during a three days (24-27 August, 2021) on “Extension strategy for promoting FPOs FPCs and SHG organized by EEI, Nilokheri.
01.09.2021	“Concept of upscaling and outscaling” during a ten days (1-10 September, 2021) training programme on “Effective extension methods for upscaling and outscaling of wheat and barley production technologies” jointly organized by ICAR-IIWBR and EEI, Nilokheri.
08.09.2021	Indicators for entrepreneurship development” during a three days (7-9 September, 2021) on “Extension strategy for promoting FPOs FPCs and SHG organized by SAMETI, Mashobra, Shimla, HP.
17.09.2021	“Nutri cereals and their role in human health” in Azadi ka amrit mahotsava lecture series organized by NBAGR, Karnal.
09.11.2021	“Cultivation practices of DBW 187 and DBW 222” for the farmers of Fatehpur district UP under Farmer First project of ICAR-IIPR Kanpur.
12.11.2021	“Organic cultivation of vegetable in kitchen gardens” for rural women. Organised by Pragati Samaj Sewi Sansthan, Karnal.
15.11.2021	“Entrepreneurship development in horticultural crop” at HTI, Uchani, Karnal
20.11.2021	“Formation and linkages of FPO & SHG” during a five days (20-24 Nov., 2011) workshop on Integrated Farming System on Mushroom production and apiculture organized by under the project “Establishment of Biotech KISAN Hub at Central Rainfed Upland Rice Research Station (ICAR-NRRI), Hazaribag.
23.11.2021	“Effective extension methods in horticultural crops” during a six days (22-27) training programme on “Extension methods and social media skills for horticultural officers” organized by EEI, Nilokheri.
24.11.2021	“Writing for farm families” in a 5 days training programme on “Social media useful approaches for agricultural extension” organized by EEI, Nilokheri.
15.12.2021	“Effective extension methods for horticultural crops” five days (13-18 December, 2021) off line training on “Extension methodology for horticulture extension personnel” organized by EEI, Nilokheri.
17.01.2022	“Entrepreneurial avenues for income generation for lac, poultry and protected cultivation” during five days (16-20 January, 2021) workshop on “Integrated Farming System highlighting backyard poultry rearing, lac cultivation & production and protected vegetable cultivation” organized Under the Project “Establishment of Biotech KISAN Hub at Central Rainfed Upland Rice Research Station (ICAR-NRRI), Hazaribag.
21.01.2022	“Agripreneurship development for doubling farmers’ income through recent approaches in livestock and allied sector”. Winter school organized by Dept. of Extension Education, Bihar Veterinary College, Patna during 10-30 January, 2021.
01.02.2022	“Communicating dairy farmers with effective extension tools” during a five days training programme on “Effective extension methods and skills for animal husbandry officers organized by EEI, Nilokheri.
10.02.2022	“Effective extension tools for extension workers” in a five days (8-12 February, 2022) training programme on “Communication skills for vibrant extension methods” for extension professionals of Jharkhand state.
15.02.2022	“Extension strategies for diversification” during a five days (15-19 February, 2022) training programme on “Extension strategies for diversification to increase farmers income” organized by EEI, Nilokheri.
21.02.2022	“Entrepreneurship in horticulture sector” in a webinar organized by HTI, Uchani, Karnal.
22.02.2022	“Etiquettes of inter personal communication” in a five days (21-25 February, 2022) on “Communication skills for upgrading capacity building of extension personnel” organized by EEI, Nilokheri.

04.03.2022	“Entrepreneurship in floriculture for farmers” webinar organized by HTI, Uchani, Karnal.
16.03.2022	“Impact of upscaling and out scaling of smart and sustainable food production technologies” during a seven days international workshop on “ skill development through impact analysis of emerging data and agricultural technology in population science organized by AAU, Jorhat Assam and IASRI, New Delhi.
Dr. Sendhil R.	
04.09.2021	“Impact evaluation of upscaled and outscaled technologies – Methods and approaches” in the 10-days training program organized by ICAR-IIWBR, Karnal and EEI, Nilokheri.
25.10.2021	“Vulnerability and climate change: The nexus and assessment methods” in the 5-days webinar organized by the Central University of Tamil Nadu, Thiruvavur.
11.11.2021	“Trust building in a team” in the training program on ‘Team building and leadership development’ organized by the Extension Education Institute, Nilokheri (Haryana) from 8 to 12 November, 2021.
25.11.2021	“Content generation for agriculture” in the training program on ‘Social media useful approaches for agricultural extension’ organized by the Extension Education Institute, Nilokheri (Haryana) from 22 to 26 November, 2021
Dr. Anil Kumar Khippal	
18.06.2021	“Importance of organic fertilizer” in awareness campaign on balanced use of fertilizer organized by KVK, NDRI and IIWBR, Karnal.
04.09.2021	“Coarse cereals and their role in human health” at KVK, Tepla, Ambala
01-10.09.2021	“Organic wheat and barley production technologies for farmers” in online training programme on “Effective extension methods for upscaling and outscaling of wheat and barley production technologies” during 1-10 September, 2021
17.09.2021	“Coarse grains and their importance in managing various diseases” at KVK, Tepla, Ambala
27.09.2021	“Coarse cereals and their role in human health” at Regional Station IIWBR, Dallang Maidan (HP)
06.10.2021	“Straw management on wheat” at KVK, NDRI, Karnal.
12.10.2021	“Waste to Wealth” at village Kunjpura, Karnal.
12.10.2021	“Conservation agriculture need of the hour” to the students.
14.10.2021	‘Spray technique’ in a training programme organized by KVK, Karnal.
15.10.2021	“Organic cultivation of vegetable in kitchen gardens” for rural women”
16.10.2021	Conservation Agriculture
18.12.2021	Importance of conservation agriculture for cleanliness at village Raipur Jattan, district Karnal.
12.01.2022	“Weed control in wheat crop” at village Staundi, district Karnal, Haryana.
21.02.2022	Management practices for seed production at village Phurlak, district Karnal, Haryana.
23.02.2022	“Post harvest management in field crops at Karan Lake, Karnal, Haryana.
25.03.2022	“Conservation agriculture and wheat and barley cultivation technologies at KVK, Nurmahal, Jalandhar for SC farmers of Jalandhar districts of Punjab.
26.03.2022	“Conservation agriculture at village Bundala for SC farmers of Jalandhar districts of Punjab.
30.03.2022	Importance of roughing for seed production at village Phurlak, district Karnal, Haryana.

TV Programmes

Date	Name of the programme
16.11.2021	DD Kisan “Chaupal Charcha” programme on Fasal Awashesh Prabandhan and Mera Gaon Mera Gaurav was shot at village Nabipur, district Karnal, Haryana.
17.11.2021	DD Kisan “Chaupal Charcha” programme on Soil Health Card Yojna and Kisan Utpadak Sangathan was shot at village Mehmoodpur, district Karnal, Haryana.
02.03.2021	Live telecast of “Gaon Café” Programme of Gaon Connection Digital Rural Platform on “Badalte Jalwayu mein Gehun Ki Fasal ko kaise bacha sakate hain” was attended.
01.11.2021	Shooting for DD Kisan Vichar-Vimarsh Programme was done through online mode.
02-04.12. 2021	Three days Shooting for DD Kisan Programme on Institute Profile was done in the institute as well as at farmers field.

Awards and Recognition

Satyavir Singh, Anuj Kumar, Sendhil R, Anil Kumar Khippal, Mangal Singh, Ramesh Chand and GP Singh awarded the first prize for editing “Gehoon Evam Jau Sandesh, January-June, 2020, Vol. 9 (1)” in newsletter category from Town Official Language Implementation Committee (TOLIC), Department of Official Language, MHA (Govt. of India), Karnal.

Ramesh Pal Singh Verma, Ajit Singh Kharub, Dinesh Kumar, Anil Khippal, Sudhir Kumar, Poonam Jasrotia, R. Sendhil, Chuni Lal, Lokendra Kumar, Jogendra Singh, Rekha Malik, Anuj Kumar, Satyavir Singh and Gyanendra Pratap Singh awarded the third prize for editing “Badalte Jalvayu Parivesh mein Jau ki Vaigyanik Kheti” in Hindi Booklet/Prashikshan Pustika category from Town Official Language Implementation Committee (TOLIC), Department of Official Language, MHA (Govt. of India), Karnal.

Dr. Mangal Singh received “First Prize” in Khula Manch Pratiyogita organized at ICAR-IIWBR, Karnal during Rajbhasha Utsav Evam Hindi Pakhwada during September 16-30, 2021.

Dr. Mangal Singh received “Second Prize” in Essay Writing Competition (Hindi) organized at ICAR-IIWBR, Karnal during Rajbhasha Utsav Evam Hindi Pakhwada during September 16-30, 2021.

Dr. Mangal Singh was awarded “Second Prize” in Best worker Competition (maximum use of Hindi in official work) organized at ICAR-IIWBR, Karnal during Rajbhasha Utsav Evam Hindi Pakhwada during September 16-30, 2021.

Annexures

Annexure-I: Category wise number of Barley Frontline Demonstrations (FLDs) Farmers during 2021-22

Annexure-II: Information on barley varieties demonstrated in Frontline Demonstrations (FLDs) during 2021-22

Annexure-III: Guidelines for conducting Rice, Wheat, Barley, Pulses, Maize and Nutri-Cereals (Sorghum, Pearl Millet & Small Millets) Frontline Demonstrations (FLDs) as the approved component of National Food Security Mission (NFSM) Scheme of the Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India, Krishi Bhawan, New Delhi.

Annexure - I : Category wise number of barley FLDs farmers during 2021-22

S.N.	Name of Centre	Allocation		Achievement		Achievement Men, Area in ha, (No. of Farmers)				Achievement Women, Area in ha, (No. of Farmers)				Men	Women	Total
		No. of FLDs	Area under FLDs (Acre)	No. of FLDs	Area under FLDs (Acre)	SC	ST	OBC	Gen	SC	ST	OBC	Gen	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)
	NHZ															
1.	CSKHPKV, HAREC, Bajaura, Kullu (HP)	7	7	7	7.0	-	-	-	1.05 (05)	-	-	-	5.97 (24)	1.05 (05)	5.95 (24)	7.0 (29)
2.	ICAR-IARI, RS, Amartara Cottage, Shimla (HP)	5	5													
3.	KVK (YSPUH&F), Lahaul & Spiti -2, Tabo, Kaza, L&S (HP)	5	5													
	NEPZ															
4.	NDUA&T, Kumarganj, Ayodhya (UP)	10	10	10	10	-	-	-	9.0 (09)	-	-	-	1.0 (01)	9.0 (09)	1.0 (01)	10.0 (10)
5.	KVK (IAS-BHU), Barkachha, Mirzapur (UP)	10	10	10	12	-	-	10.0 (10)	-	-	-	-	2.0 (02)	10.0 (10)	2.0 (02)	12.0 (12)
6.	CSAUA&T, Kanpur (UP)	10	10	10	10	-	-	10.0 (10)	-	-	-	-	10.0 (10)	-	-	10.0 (10)
7.	BHU, Varanasi (UP)	12	12													
8.	KVK, Gorakhpur-2 (GGSS), Gorakhpur (UP)	10	10	10	10	-	-	10.0 (10)	-	-	-	-	10.0 (10)	-	-	10.0 (10)
	NWPZ															
9.	KVK (SKUAST-Jammu), Rajhani, Kathua (J&K)	8	8	8	8	0.5 (02)	-	-	7.5 (19)	-	-	-	-	8.0 (21)	-	8.0 (21)
10.	PAU, Ludhiana (Punjab)	8	8	8	8	1.0 (01)	-	-	7.0 (07)	-	-	-	-	8.0 (08)	-	8.0 (08)
11.	KVK, (PAU), Khokhar Khurd, Mansa (Punjab)	10	10	10	10	-	-	-	10.0 (13)	-	-	-	-	10.0 (13)	-	10.0 (13)
12.	KVK (PAU), Kheri, Patran Road,	5	5	5	6*	-	-	-	6.0 (06)	-	-	-	-	6.0 (06)	-	6.0 (06)

S.N.	Name of Centre	Allocation		Achievement		Achievement Men, Area in ha, (No. of Farmers)				Achievement Women, Area in ha, (No. of Farmers)				Men	Women	Total
		No. of FLDs	Area under FLDs (Acre)	No. of FLDs	Area under FLDs (Acre)	SC	ST	OBC	Gen	SC	ST	OBC	Gen	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)
	Sangrur (Punjab)															
13.	KVK (PAU), Goneana, Mukatsar (Punjab)	5	5	5	5	-	-	-	5.0 (05)	-	-	-	-	5.0 (05)	-	5.0 (05)
14.	KVK (PAU), Dabwali Road, Near Kheti Bhawan, Bathinda (Punjab)	5	5	5	5	-	-	-	5.0 (05)	-	-	-	-	5.0 (05)	-	5.0 (05)
15.	CCSHAU, Hisar (Haryana)	10	10	10	10	7.0 (07)	-	-	1.0 (01)	2.0 (02)	-	-	-	8.0 (08)	2.0 (02)	10.0 (10)
16.	KVK (BB Ashram), Rampura, Rewari (Haryana)	8	8	8	8	-	-	8.0 (07)	-	-	-	-	-	8.0 (07)	-	8.0 (07)
17.	KVK (CCSHAU), Bhiwani (Haryana)	10	10	10	12*	-	-	-	12.0 (12)	-	-	-	-	12.0 (12)	-	12.0 (12)
18.	ICAR-IIWBR, Kamal (Haryana)	5	5	5	5	-	-	-	5.0 (05)	-	-	-	-	5.0 (05)	-	5.0 (05)
19.	RARI (SKNAU), Durgapura, Jaipur (Rajasthan)	10	10	10	10	3.0 (03)	-	7.0 (07)	-	-	-	-	-	10.0 (10)	-	10.0 (10)
20.	KVK (Pragati Trust), Tankarda, Chomu, Jaipur (Rajasthan)	5	5	5	5	-	-	4.0 (4.0)	-	-	-	1.0 (1.0)	-	4.0 (04)	1.0 (01)	5.0 (05)
21.	KVK (AU-Kota), Akorashi, Dhindora, Hindauncity, Karauli (Rajasthan)	8	8	8	11*	-	-	8.0 (8.0)	-	-	-	2.0 (02)	1.0 (01)	8.0 (08)	3.0 (03)	11.0 (11)
22.	KVK, Navgaon, Alwar-1, (Rajasthan)	5	5	5	5	-	-	4.0 (04)	-	-	-	1.0 (01)	-	4.0 (04)	1.0 (01)	5.0 (05)
23.	ACAES, Amity University, Noida, Uttar Pradesh	10	10	10	10	-	-	-	10.0 (10)	-	-	-	-	10.0 (10)	-	10.0 (10)
	CZ															
24.	RCA (MPUA&T), Udaipur, Rajasthan	10	10	10	10	1.0 (01)	1.0 (01)	5.0 (05)	2.0 (02)	-	-	1.0 (01)	-	9.0 (09)	1.0 (01)	10.0 (10)

S.N.	Name of Centre	Allocation		Achievement		Achievement Men, Area in ha, (No. of Farmers)				Achievement Women, Area in ha, (No. of Farmers)				Men	Women	Total
		No. of FLDs	Area under FLDs (Acre)	No. of FLDs	Area under FLDs (Acre)	SC	ST	OBC	Gen	SC	ST	OBC	Gen	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)	Area(ha) (No. of Farmers)
25.	KVK (MPUPA&T), Dhoinda, Rajasmand (Raj.)	10	10	10	10	1.0 (01)	-	6.0 (06)	-	-	-	3.0 (03)	-	7.0 (07)	3.0 (03)	10.0 (10)
26.	KVK (JNKVV), Kuthulia Farm, Rewa (MP)	8	8	8	8	-	-	2.0 (02)	6.0 (06)	-	-	-	-	8.0 (08)	-	8.0 (08)
27.	KVK (JNKVV), Purushottampur, Panna (MP)	8	8	8	8	-	-	6.0 (06)	2.0 (02)	-	-	-	-	8.0 (08)	-	8.0 (08)
28.	KVK (JNKVV), Tikamgarh (MP)	8	8	8	8	2.25 (03)	-	2.50 (03)	2.25 (03)	-	-	-	1.0 (01)	7.0 (09)	1.0 (01)	10.0 (8)
29.	KVK (RVSKVV), Biaora, Kothi Bagh, Rajgarh (MP)	5	5	5	5	-	-	-	5.0 (05)	-	-	-	-	5.0 (05)	-	5.0 (05)
30.	COA (JNKVV), Ganj Basoda, Vidisha (MP)	10	10	10	10	-	-	10.0 (10)	-	-	-	-	-	10.0 (10)	-	10.0 (10)
31.	KVK (BUA&T-Banda), Govt Agri Farm, Khiria Misra, Bamourikala, Devgarh Road, Lalitpur (UP)	5	5	5	7*	-	-	2.0 (02)	5.0 (05)	-	-	-	-	7.0 (07)	-	7.0 (07)
32.	KVK (BUA&T-Banda), Bharari, Bhojla, Jhansi(UP)	5	5	5	5	-	-	4.0 (04)	-	-	-	1.0 (01)	-	4.0 (04)	1.0 (01)	5.0 (05)
	Total	250	250	228	238.0	15.75 (18)	1.0 (01)	98.5 (98)	100.8 (120)	2.0 (02)	0.0 (0.0)	9.0 (09)	10.97 (29)	216.05 (237)	21.95 (40)	238.0 (277)

Note : The figures in brackets indicate the number of farmers. * Area covered more than allotted which is restricted equal to allotted FLDs.

Annexure-II : Information on barley varieties demonstrated in Frontline Demonstrations (FLDs) during 2021-22

Variety	Zone	Production condition	Year	Released by CVRC/SVRC	Developed by	Height (cm)	Days to maturity	TGW (gm)	Average Yield (q/ha)	Pot. Yield (q/ha)
HBL 804 (Him Palam Jau 2) Dual purpose	Low and Mid Hills of HP (Zone-I)	Rainfed/ Irrigated	2018	SVRC	CSKHPKV, HAREC, Bajaura, Kullu (HP)	70-90	175-185	40.0	Grain yield = 20-25 Green fodder yield = 25-30	-
HBL 713 (Him Palam Jau 1)	Low and Mid Hills of HP	Rainfed/ Irrigated	2016	SVRC	CSKHPKV, HAREC, Bajaura, Kullu (HP)	70-90	170-180	40.30	30-35	51.00
BHS 400	NHZ	Rainfed, Timely sown	2014	CVRC	IARI, Regional Station, Shimla, HP	83	168	39.13	32.71	58.70
VLB 118	NHZ	Rainfed, Timely sown, Low fertility	2013	CVRC	VPKAS, Almora, Uttarakhand	75	164	40.97	30.84	33.20
RD 2907	NWPZ NEPZ	Saline/ Alkaline soils	2018	CVRC	RARI, Durgapura, Jaipur, Rajasthan	88	124	43.3	35.25	53.60
DWRB 137	NEPZ	Irrigated, Timely sown	2018	CVRC	IIWBR, Karnal, Haryana	87.67	155	40.3	37.9	53.62
	CZ	Irrigated, Timely sown	2018	CVRC	IIWBR, Karnal, Haryana	80.70	113	46.0	42.9	67.44
	NWPZ	Irrigated, Timely sown	2018	CVRC	IIWBR, Karnal, Haryana		124	44.0		52.94
DWRB 182	NWPZ	Irrigated, Timely sown	2020	CVRC	IIWBR, Karnal, Haryana	90	133	44.0	49.7	74.50

Handwritten notes: 5D(S)
 16.06.2021

दि. सं./Diary No. 567
 दि. Date: 16/6/21
 कृषि विकास विभाग, जयपुर
 Dte. of Millets Development, Jaipur

F. No. CPS 18-1/2021-NFSM (FTS-96792-E)

Government of India
 Ministry of Agriculture & Farmers Welfare
 Department of Agriculture, Cooperation & Farmers Welfare
 (Crops & PHMF Division, NFSM Cell)

Krishi Bhawan, New Delhi
 Dated: 24th May, 2021

To

- | | |
|--|---|
| <p>1. The Director
ICAR- Indian Institute of Pulses Research,
Kanpur (Uttar Pradesh)</p> | <p>4. The Director
ICAR- Indian Institute of Maize Research,
PAU, Ludhiana (Punjab)</p> |
| <p>2. The Director
ICAR- Indian Institute of Millets Research,
Hyderabad (Andhra Pradesh)</p> | <p>5. Project Coordinator
ICAR- All India Coordinated Small Millets
Improvement Project
Bengaluru (Karnataka)</p> |
| <p>3. The Director
ICAR- Indian Institute of Wheat & Barley
Research, Karnal (Haryana)</p> | <p>6. Project Coordinator
ICAR- All India Coordinated Pearl Millet
Improvement Project,
Jodhpur (Rajasthan)</p> |

Subject: Administrative Approval for organization of Front Line Demonstrations on Pulses, Coarse cereals and Nutri-Cereals during the year 2021-22-reg.

Sir,

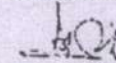
I am directed to convey that the competent authority of this Department has approved an outlay of Rs. 264.00 lakh (Rupees Two hundred and Sixty Four lakh only) for organization of FLDs of Barley, Pulses, Maize & Nutri-Cereals (Sorghum, Pearl Millet and Small Millets) during 2021-22. The crop specific details of FLDs for 2021-22 are given as under:

S. No	Nodal Agency for Implementation of FLDs	Name of crop	Approved No. of FLDs (in ha.) during 2021-22	Rate of financial assistance (Rs/ha)	Approved Financial allocation (Rs. In lakh) during 2021-22
1	IIW & BR, Karnal	Barley	100	6000	6.00
2	IIPR, Kanpur	Pulses	2100	9000	189.00
3	IIMR, Ludhiana	Maize	300	6000	18.00
4	AICSMIP, Bengaluru	Small millet	300	6000	18.00
5	AICPMIP, Jodhpur	Pearl millet	350	6000	21.00
6	IIMR, Hyderabad	Sorghum	200	6000	12.00
	Grand Total		3350		264.00

2. The above approval is subject to the following condition:

- Each implementing agency will constitute monitoring team with involvement of officials of Crop Development Directorates, DAC&FW, State Department of Agriculture and Scientists of ICAR/SAUs.
- The varieties which are within 3 years either of own production or SAUs sources be used (5 years for problematic areas viz; hills, Saline, Alkaline Soils etc.) period from the date of notification/release/identification should only be included in the demonstration purpose and those varieties in the border lines should be avoided.
- Under FLDs, full package kit like seed, INM, IPM material should be given to farmers at the time of sowing.
- All the FLDs should be conducted under the close supervision of SAUs/KVKs/ICAR institute.
- Farmers practice, crop production and protection technologies used in FLDs should be obtained in the progress report. The reasons for yield gap between FLDs and farmers' practice should be mentioned in progress report.
- No chemical fertilizer is allowed as input under FLD programme, however, payment to various farm operations/farm services and other critical inputs (seed, bio-fertilizers, lime, gypsum and micronutrients etc.) are allowed. Farmers have to apply the recommended doses of fertilizers.
- The FLD programme should be conducted in cluster approach of 10 hectares as per guidelines already circulated.
- Field days should be regularly organized and prior information should be sent to DA,C&FW and Director, ATARIs of ICAR.
- The details of FLD beneficiary-farmers along with contact number should also be furnished to DA,C&FW.
- All implementing Institutes should ensure to organize at least 10% of the FLDs or as per availability of seeds on bio-fortified variety of pulses/ nutri-cereals and Coarse Cereals in the districts with high burden of malnutrition.
- 5% of FLD on pulses and Nutri cum coarse Cereals shall be conducted in North-Eastern States.
- All implementing agencies and their coordinating centers should involve agronomist/plant breeder to finalize technologies to be demonstrated in FLD programme and follow up visits to demonstration sites.
- The FLDs implementing agency will re-allocate the number of FLDs as per approval and intimate to DA,C&FW.
- Critical input amounting to Rs. 8100/- out of Rs. 9000/- for Pulses Rs. 5100/- out of Rs. 6000/- for Barley, Maize & Nutri-Cereals (Sorghum, Pearl Millet and Small Millets) should be provided to beneficiary farmers.
- Each implementing agency will send technical programme and progress report of FLDs of Pulses, Barley, Maize & Nutri-Cereals (Sorghum, Pearl Millet and Small Millets) in formats (already circulated) to DPD, Bhopal and DMD, Jaipur respectively on quarterly basis.
- Geo-tagging of all FLDs is compulsory which is to be conducted during 2020-21 by each centre of FLD. The software information would be shared with each centre.
- In eastern region, FLDs should focus on technologies in weed management aspects.
- All institutes should follow the format of IIPR, Hyderabad for reporting of the FLDs on their website.

Yours faithfully,



(Dr. A.P. Singh)

Additional Commissioner (Crops)

Copy to:

1. ADG (FFC)/ADG (O&P), ICAR, Krishi Bhawan, New Delhi.
2. Director, Directorate of Wheat, Ghaziabad/Pulses, Bhopal/Millets, Jaipur.
3. Under Secretary (Finance)/(CA-V), DA,C&FW, Krishi Bhawan, New Delhi.
4. PPS to Agriculture Commissioner (DA,C&FW), Krishi Bhawan, New Delhi
5. PPS to JS (Crops & Oilseeds)/ADC (Crops) Krishi Bhawan, New Delhi.
6. AC (Pulses)/AC (Crops)/ JD (NFSM), DA,C&FW, Krishi Bhawan, New Delhi.
7. Lead Programmer (NFSM), DAC, Krishi Bhawan, New Delhi for uploading in website.

Copy for information to

- PPS to DG, ICAR, Krishi Bhawan/DDG (Extn.)ICAR, KAB-I, New Delhi.

GUIDELINES FOR FRONT LINE DEMONSTRATIONS UNDER NFSM

Front Line Demonstrations (FLDs) is a unique approach to provide a direct interface between researcher and farmers as the scientists are directly involved in planning, execution and monitoring of the demonstrations for the technologies developed by them and get direct feedback from the farmers' field about the crops like wheat, rice, maize, barley and nutri-cereals, etc., pulses production in general and technology being demonstrated in particular. This enables the scientists to improvise upon the research programme accordingly. In FLDs, the subject matter scientists provide technological inputs to extension scientists to organize the demonstrations. Thus, FLDs provide an opportunity to researchers and extension personnel for understanding the farmer's resources and requirement to fine tune and/or modify the technologies for easy adaptability at farmers' fields.

The FLDs for Rice, Wheat, Barley, Pulses, Maize and Nutri-Cereals (Sorghum, Pearl Millet and Small Millets) are approved component of National Food Security Mission (NFSM). The FLDs are conducted by the ICAR/SAUs system. The ICAR Institutes i.e. Indian Institute of Rice Research, Hyderabad, AP; Indian Institute of Wheat & Barley Research, Karnal; Indian Institute of Pulses Research, Kanpur; Indian Institute of Maize Research, Ludhiana, Punjab; Indian Institute of Millets Research, Hyderabad, AP; AICRP on Small Millets, UAS, GKVK Campus, Bangalore, Karnataka and AICRP on Pearl Millet, Mandore, Jodhpur, Rajasthan for organizing the FLDs on Rice, Wheat & Barley, Pulses, Maize, Sorghum, Pearl Millet and Small Millets respectively.

1. FRONT LINE DEMONSTRATIONS (FLDs)

Frontline Demonstration is a form of applied research through ICAR/SAUs system on latest notified/released varieties along with full package of practices on selected farmers' fields with a view to demonstrate the potentiality of the technologies to (a) participating farmers (b) neighboring farmers and other agencies; (c) to analyze the production and (d) performance of the technologies for scientific feedback.

2. OBJECTIVES

- To demonstrate improved Crop Production Technologies of Rice, Wheat, Barley, Pulses, Maize, Nutri-Cereals such as Pearl Millet, Sorghum and Small Millets, on the farmers' fields;
- To popularize the newly notified and improved varieties/technologies for varietal diversification and efficient management of resources.
- To bring synergy among planners, researchers, farmers and industry for parable interface through seminars/symposium on emerging themes of importance in the field of Rice, Wheat, Barley, Pulses, Maize, Nutri-Cereals such as Pearl Millet, Sorghum and Small Millets production for deciding strategies for development of these crops.

3. SELECTION OF TECHNOLOGY

The need and necessity of demonstration should invariably be based on the emerging issues. The DAC&FW will in advance communicate the desired technologies/thematic areas on which the FLDs to be conducted and the concerned ICAR institutes in consultation with SAUs and other stakeholders should develop a comprehensive plan for organizing the demonstrations.

There will be a Committee under chairmanship of Director of Research of concerned State Agriculture University which will decide the technology to be demonstrated. The other members of the committee will be Director of Extension, Joint Directors/Heads of Departments of Crop Production/Agronomy, Plant Breeding and Plant Pathology. The technology so decided should be discussed along with the results of the station trials in Annual Workshops and the technical programme should be finalized well in advance.

The Technology programme should take care of the availability of seed of improved varieties/hybrids, drought resistance varieties, resource conservation technologies, method of sowing, IPM, INM, micro irrigation, farm machines etc. to be demonstrated. The seed agencies and the manufacturers should also be taken on board for deciding the FLDs.

The varieties which are within 3 years (5 years for problem areas viz; Hills, Saline, Alkaline Soils etc.) period from the date of notification/release/identification' should only be included in the demonstration purpose and those varieties in the border lines should be avoided.

The details of the technical programme should be communicated by first week. of April for kharif crops and by first week of August for winter crops to Crops Division of DAC&FW to convey the administrative approvals. The plan of FLDs will be approved by a committee comprising of:

Agriculture Commissioner	Chairman
Joint Secretary (Crops)	Member
Additional Commissioner (Crops)	Member
Directors (IIWBR/DRR/IIPR/IIMR)	Member
Directors (DWD/DRD/DPD/DMD)	Member
Deputy Commissioner (Seeds)	Member
Deputy Commissioner (Machinery)	Member
Deputy Commissioner (Crops)	Member-Secretary

4. SELECTION OF SITE AND BENEFICIARY

- The site of demonstrations should be at a place easily accessible and at central point to attract large number of audience/farmers for more impact, easy monitoring and feedback.
- The technology selected for demonstration should be of paramount importance and preferably with a farmer.
- To create better and visible impact of a technology the demonstrations may be conducted in **cluster approach of at least 10.0 hectares**. One demonstration at individual farmer should never be less than 0.4 hectare and not exceeding to one hectare. Besides, technology demonstration in hilly and non-traditional areas of crops, each cluster should be up to 4.0 hectare depending upon the size of each Demonstration. However, one individual demonstration should never be less than 0.20 hectare.
- No local varieties/farm produced seeds under Frontline demonstrations should be used.
- Number of demonstrations of a particular variety and package of practices should be decided keeping in view the scientific requirement for reliability and validated of the results.
- Demonstrations may be conducted on farming situations for scientific interpretation. Participatory approach may be followed in conducting demonstrations associating (i) farm scientists (ii) extension workers and (iii) demonstrating farmers, so that we have effective implementation leading to better adoption and diffusion of technology.
- Other equal size plots of the demonstrating farmers or the equal size of plot of neighboring farmers in the same farming situation may be considered as check or control plots for objective comparison of the results.
- Selection of the site should be decided in consultation with Department of Agriculture of the concerned State and should be such that it is easily assessable to farmers of neighbouring villages and extension workers coming from different parts of the district. The demonstrating farmers should be progressive one with leadership quality and who is easily approachable by other farmers & extension workers.
- Special attention towards soil problems like acidity, alkalinity, micro-nutrients deficiency, soil borne pests and diseases should be tackled before taking up the Frontline demonstrations. Identify broad based farming situations and conduct only limited number of FLDs with more emphasis on the quality of FLDs implementation.
- Identification of FLDs beneficiaries shall be carried out by the Implementing Centres as per the requirement/aptitude of the farmers to conduct the demonstrations. Preference for FLDs should be given to the Socio-economically backward/Small and Marginal/ST/SC/OBC/ women farmers shall be given at the time of the identification of FLD beneficiaries.

5. SIZE OF FRONT LINE. DEMONSTRATIONS

- The size of one demonstration will be 0.40 hectare to one hectare depending upon the

Size of plot available with small and marginal/women farmers who will be given preference in the selection of beneficiaries.

- The assistance for demonstrations will be decided upon the area. The rate of assistance is Rs.9000/- for Rice, Wheat & Pulses and Rs.6000/- for Coarse Cereals (Maize & Barley) and Nutri-Cereals (Sorghum, Pearl Mints and Small Millets) per demonstration of one ha.

6. IMPLEMENTING AGENCY

- Frontline Demonstrations will be organized by ICAR Institutes through their Centers/Krishi Vigyan Kendras (KVKs under ICAR system) and State Agriculture Universities, reputed and registered NGOs.
- Indian Institute of Rice Research, Hyderabad, AP will be the nodal institute for organizing the FLDs on Rice; Indian Institute of Wheat & Barley Research, Karnal for Wheat & Barley; Indian Institute of Pulses Research, Kanpur for Pulses; Indian Institute of Maize Research, Ludhiana, Punjab for Maize; Indian Institute of Millets Research, Hyderabad, AP for Sorghum; AICRP on Small Millets, UAS, GKVK Campus, Bangalore, Karnataka for Small Millets and AICRP on Pearl Millets, Mandore, Jodhpur, Rajasthan for Pearl Millet.

7. PLANNING FOR THE DEMONSTRATION

- A local survey may be conducted to (a) ascertaining the socio-economic conditions of the farmers; (b) farming situations under which the crop is grown; and (c) the existing level of adoption of technologies and the productivity. This will serve as a broad benchmark for future planning demonstrations work and evaluation.
- Agro-economic constraint analysis should be done of the representative farmers sample to identify the critical factors/inputs for the adoption of technologies by the farmers require support for such inputs.
- Advance planning may be done for the demonstration so that all the critical inputs are arranged in time.
- Orientation training may be organized for half a day for all the participating persons about all aspects of technologies and methodologies including aims and objectives of the demonstrations so that there is uniform clarity of purpose for better working relating and linkages.

8. APPROVAL OF TECHNICAL PROGRAMME

- The details of physical and financial targets (Agency-wise and location-wise) for laying out the FLDs on Kharif crops to be organized by participating centers may be

Communicated to the Crops Division of Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Delhi latest by 30th April and by 30th August for Rabi crops.

- The in-principle approval for conduct of FLDs will be communicated to the concerned ICAR institutes in April for all the crops by the Department to facilitate them to arrange the required inputs and also the selection of beneficiary farmers.

9. IMPLEMENTATION

- Prior to the launching of the demonstrations, all participating agencies/persons may be informed well in advance about the date and venue (demonstrating farmers on the demonstration and are invited to participate). On occasion, the neighboring farmers may also be invited. They should be educated about the details of the technologies and objectives of the FLDs. Sowing of the crops, may be done in the presence of participating persons.
- All the important farm operations may be carried out by the demonstrating farmers under the close supervision and guidance of the Scientist-in-Charge of FLDs. The concerned scientist(s) may record observations of all important events so that the results could be interpreted.
- When the demonstrations plot is at maturity, the field day may be organized where neighboring farmers including farm women and extension workers are invited. A question-answer hour i.e buzz session (between the scientists, farmers and extension workers) may be organized.
- The information pertaining to different technological interventions adopted at Check plot and FLD plot must record to evaluate the technological gap.
- The concerned scientist is expected to keep records of various expenses incurred on various inputs used for the demonstrations plot(s) and check plot(s) for deriving cost benefits..
- After harvesting and threshing the yield (grain & straw/stalk etc.) may be recorded for demonstration plot and check plot.

10. MONITORING

- Monitoring is required on continuous and regular basis through visits to FLDs plots, recording observations, getting the feedback from the farmers and extension workers.
- The Scientist-in-Charge of the FLDs in SAUs and ICAR Institute should ensure to make regular visits of the demonstration plot to have proper feedback on the impact of the technology.

- Monitoring teams comprising of Senior Scientists/Officers of the ICAR system/SAUs, Ministry of Agriculture and the State Department will make visits to such demonstration plots for getting direct feedback and offering suggestions and guidance.
- The Committee comprising of scientist of the University, concerned Project Director/Coordinator, ADG (FFC), ICAR, Additional Commissioner (Crops) and Director, Directorate of Rice, Wheat, Millets and Pulses Development as representative from the Department of Agriculture, Cooperation & Farmers Welfare, M/o Agriculture & Farmers Welfare, Government of India. The Committee will review the progress of FLDs periodically at least twice during the crop season. The periodical progress report will be submitted by ICAR to the Ministry.
- The results and feedback as obtained by the monitoring teams/others should be compiled by the Concerned Crop Development Directorates to be submitted to Agriculture Commissioner. The reports on physical and financial progress will be submitted directly to Agriculture Commissioner of this Department with a copy to the Director, Directorate of Rice, Wheat, Millets and Pulses Development, Patna, Ghaziabad, Jaipur and Bhopal regularly by 10th of every subsequent month.
- It is also requested to kindly arrange to introduce a more effective system to develop closer coordination between State functionaries of various input units/other State Officials, extension unit of State Agricultural Universities and Panchayati Raj Institutions in implementing of the Programme. Details of such coordination exercise/meeting should include in the periodic physical report.

11. REPORTING AND DOCUMENTATION

- The results of the demonstrations may be properly documented, reported and circulated among all the concerned personnel of the State Department of Agriculture, demonstrating farmers etc.
- A success story may be published in popular extension journals (widely circulated in the state) for the benefits of other farmers preferably in local languages.
- Full report of FLDs so conducted by ICAR/SAUs be sent to Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare by Project Directorate/Coordinator well before the Annual Workshop and is also presented in the Workshop.

12. FUNDING PATTERN

- Frontline Demonstrations on the basis of above guidelines would be conducted in Different Eco-system through Crop Directorate/Coordinating Unit of Indian Council of Agricultural Research/State Agricultural Universities in the potential areas of the country.

The funds for the demonstrations so organized by the ICAR/SAUs would be provided by the Government of India from the funds available in National Food Security Mission. For such demonstrations, funds shall be provided directly to the concerned Director/Project Director and the pattern of assistance would be Rs.9000 for Rice, Wheat & Pulses and Rs.6000 for Barley, Maize & Nutri-Cereals (Sorghum, Pearl Millet and Small Millets) per demonstration of one hectare or actual of the cost, whichever is less. The item-wise detailed break-up of the expenditure for organizing a Frontline Demonstration in one hectare of rice, wheat, pulses, maize, Barley and Nutri-Cereals is given as under:

S.N.	Component	Amount (Rs.)			Maize, Barley & Nutri-Cereals (Sorghum, Pearl Millet & Small Millets)
		Rice	Wheat	Pulses	
1	Cost of critical inputs (seeds/ biofertilizers/PP chemicals/ herbicides) to supplement the cultivation charges	8100	8100	8100	5100
2.	Organization of Field Day	250	250	250	250
3.	Display board and publicity material (posters/pamphlets/ leaflets etc.)	250	250	250	250
4.	visit of scientists excluding TA/DA, but hiring of Taxi/POL etc.	300*	300*	300*	300*
	Contingencies/typing of results/ minutes etc.	100	100	100	100
	Total	9000	9000	9000	6000

* Nodal FLD implementing Institute/Directorate may retain 50 percent of the amount for effective monitoring of FLDs across the country.

- Funds earmarked for FLDs may be made available to the concerned SAUs/Scientist well before the start of the sowing season by concerned Directorate/Project Directorate of ICAR.
- FLD on newly released varieties should include the package of improved production technologies. The expenditure in excess of the approved norm per hectare if any, should be incurred by the beneficiary-farmer. Therefore, for the FLDs only those farmers who are willing to provide critical resources should be identified.
- In order to monitor the programme, the following information may be furnished by concerned Director/Project Director to the concerned Crop Development Directorate under intimation to Crops Division of Department of Agriculture, Cooperation & Farmers Welfare:

Rice		
Sl. No.	Activity Milestone	Scheduled date for submission of reports
1.	Name and full addresses of the selected farmers, varieties used, area sown under the Demonstration and Technology demonstrated	Kharif - 15 th July, Rabi - 15 th November
2.	Crop stand and appropriate date for visit by the FLD monitoring team	Kharif - 15 th September Rabi - 15 th December
3.	Tentative dates for organization of Farmer's Day.	Kharif - 30 th September Rabi - 25 th February
4.	Report and complete data about FLDs conducted	Kharif - 15 th December Rabi - 15 th May
Wheat & Barley		
1.	Name and full addresses of the selected farmers, varieties used, area sown under the Demonstration and Technology demonstrated	15 th December
2.	Crop stand and appropriate date for visit by the FLD monitoring team	15 th January
3.	Organization of Farmer's Day	30 th January
4.	Report and complete data about FLDs conducted	15 th May
Pulses, Maize & Nutri-Cereals (Sorghum, Pearl Millet & Small Millets) Kharif		
1.	Name and full addresses of the selected farmers, varieties used, area sown under the Demonstration and Technology demonstrated	Kharif - 15 th July,
2.	Crop stand and appropriate date for visit by the FLD monitoring team	Kharif - 15 th September
3.	Tentative dates for organization of Farmer's Day	Kharif - 30 th September
4.	Report and complete data about FLDs conducted	Kharif - 15 th December
Pulses-Rabi		
1.	Name and full addresses of the selected farmers, varieties used, area sown under the Demonstration and Technology demonstrated	15 th December
2.	Crop stand and appropriate date for visit by the monitoring team	15 th January
3.	Organization of Farmer's Day	30 th January
4.	Report and complete data about FLDs conducted	15 th May

(Signature)
24/5/18

ANNEXURE-I

DETAILED INFORMATION OF INDIVIDUAL FRONT LINE DEMONSTRATION (FLD)

Detail of beneficiaries of FLDs during Kharif/Rabi/Summer of Year _____

- (1) Name & Complete address of the Implementing Centre:-
- (2) Website/E-mail ID :
- (3) Fax No.
- (4) Name of Crop
- (5) Name of Variety/hybrid
- (6) Location
- (7) District
- (8) State

S.N.	Name of beneficiary with address and Phone number	Category (SC/ST/OBC/Gen) & Gender (Male/Female)	Area of FLD (ha)	Pattern of Financial Assistance								Technology demonstrated	Field day/ Kishan Goshthi	Follow visits of Scientist
				Seed		Bio-fertilizer		Micro-nutrients		Weedicides/ pesticides				
				Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value			

Signature of Beneficiary

Signature with Seal
Scientist in Charge
Implementing Centre

Signature with Seal
Director/Project Coordinator

ANNEXURE-II

Monthly/Quarterly/Final physical and financial progress report of FLDs during Kharif/Rabi/Summer of Year _____

(1) Name & Complete Address of the Implementing Centre :

(2) Website/E-mail ID :

(3) Fax No. :

(4) Name of Crop :

No	Physical				Financial (Rs.)			
	Allocation		Achievement		Allocation	Achievement		
	No. of FLDs	Area under FLDs	Number of FLDs	Area under FLDs				
Men								
SC								
ST								
OBC								
Gen								
Women								
SC								
ST								
OBC								
Gen.								
Total								

Signature with Seal
Director/Project Coordinator

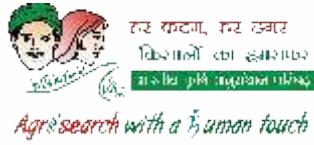
ANNEXURE-III

**Results of FLDs conducted at various locations on farmer's field during
Kharif/Rabi/Summer of year _____**

- (1) Name & Complete Address of the implementing Centre :
- (2) Website/E-mail ID :
- (3) Fax No. :
- (4) Name of Crop :

Implementing Center/Location	Grain yield (kg./ha.)				Fodder yield (kg./ha.)	
	Average Yield of concerned State	Average Yield of concerned District	Yield under improved practice of FLD	Yield under farmer's Practice	Yield under Improved Practice of FLD	Yield under farmer's Practice

Signature with Seal
Director/Project Coordinator



61st Wheat and Barley Research Workers' Meet

(August 29-31, 2022)

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (MP)

61^{वीं} अखिल भारतीय गेहूँ एवं जौ अनुसंधान कार्यकर्ता गोष्ठी

(29-31 अगस्त, 2022)

राजमाता विजयराजे सिंधिया कृषि विश्वविद्यालय, ग्वालियर (मध्य प्रदेश)

