

FRONTLINE DEMONSTRATIONS ON RICE 2019-20

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A Brief Report on Frontline Demonstrations on Rice 2019-20
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Contents

S No.	Item	Page
1	Introduction	6
2	Technical programme of FLD 2019-20	8
3	Statewise Details of FLDs	24
4	Ecosystem wise Performance of FLD Technologies	143
5	Conclusions	156
6	List of Nodal Officers	157
7	Acknowledgements	161

I INTRODUCTION

Rice is the most important crop in India, and plays a critical role in food security. It is a choice crop of the millions of poor and small farmers not only for income but also for household food security. India has the largest area under rice worldwide with 42.5 million hectares and a production that comes second only behind China in total rice production. The current productivity is still much lower and needs to be increased within the limits of the scope for expanding the area or irrigation coverage.

In view of the stagnating food grain production and an increasing consumption need of the growing population, Government of India has launched the Centrally Sponsored Scheme, '**National Food Security Mission**' (NFSM) in August 2007. The major objective of this scheme is to increase production and productivity of rice, wheat and pulses on a sustainable basis so as to ensure food security of the country. The approach is to bridge the yield gap through dissemination of improved technologies and farm management practices.

The Frontline Demonstrations (FLDs) for Rice are an approved component of the National Food Security Mission to augment production of food grains in the country and are conducted by the ICAR/SAUs system. The ICAR-Indian Institute of Rice Research, Hyderabad, is the nodal Institution for organizing the FLDs on rice.

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) neighbouring farmers and other agencies; (c) to analyze the production (d) performance of the technologies for scientific feedback.

Objectives of FLD Program

- To demonstrate improved Crop Production Technologies of Rice 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 production for deciding strategies for development of these crops.

Funding Pattern

Frontline Demonstrations on the basis of above guidelines are 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 are provided by the Government of India from the funds available in National Food Security Mission. For such demonstrations, funds are provided directly to the concerned Director and the pattern of assistance is Rs.9000 for Rice per demonstration of one hectare or actual of the cost, whichever is less.

Frontline Demonstration on Rice (2019-20)

The detailed item-wise break-up of the expenditure for organizing a Frontline Demonstration on one hectare of rice is given as under:

S.NO	Component	Amount
1	Cost of critical inputs (seeds/ bio-fertilizers/manures/PP chemicals/ herbicides)to supplement the cultivation charges	8100
2	Organization of Field Day	250
3	Display board and publicity material (posters/pamphlets/leaflets etc.)	250
4	Visit of scientists excluding TA/DA, but hiring of Taxi/POL etc	300*
5	Contingencies/typing of results/ minutes etc	100
	Total	9000

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

The results of the frontline demonstrations conducted during the year 2019-20 are briefly given in this report.

II TECHNICAL PROGRAMME - FRONTLINE DEMONSTRATIONS ON RICE 2019-20

During 54th Annual Rice Group Meeting held at NRRI, Cuttack special session was organized for formulating a strategy for implementation of FLDs during ensuing season. The results of FLDs conducted during 2018-19 were presented by Dr. Shaik N. Meera, Principal Scientist and Coordinator, FLD programme along with the general guidelines for effectively conducting forthcoming FLDs. In the session, it was categorically discussed that the FLDs program should address the problems faced by the rice farmers and how best their new technologies could fit into the local contexts. It was made clear that under the critical components no chemical fertilizer is allowed to be purchased and distributed. It was suggested that the scientists should identify the problems first and organize an orientation training to the clientele farmers, preference should be given to the marginalized sections and women farmers, well designed field board is a pre-requisite and it should explain everything about the FLD in a lucid manner. It was also conveyed to all the cooperators, as per the advisories from Ministry, to geo-tag the demonstration plots. In order to formulate the plan for FLDs to be organized during 2019-20, indent forms along with Annexures –I, II, III, IV and V were distributed to the cooperators and the indents for proposed FLDs were collected. It was emphasized that whole package of practices has to be demonstrated in the farmers' fields apart from the FLD variety/ hybrid/ technologies allotted.

A committee was constituted to critically analyze the indents submitted by the cooperators and a tentative program for FLDs for the year 2019-20 was chalked out. As decided in the Ministry's review meeting, more than 5% of the Rice FLDs were being proposed for the North East Region. As per the advice from the Ministry, more emphasis was given for organizing the FLDs in eastern and North-eastern hill regions. Critical care was taken to include the demonstrations on varieties, hybrids along with management practices, conservation technologies, labour saving/ input saving technologies etc.,

In the year 2019-20, overall 1000 FLDs were planned with varieties, hybrids and thrust areas like biofortified varieties, pest and disease management, farmer friendly machineries, drudgery reduction etc covering 6 major rice ecosystems and 19 states of the country. A cafeteria of new and innovative technologies is proposed to be demonstrated in the farmers' fields. Care was taken to consider only recently released varieties and hybrids for demonstration. Instead of focusing on only varietal demonstrations, cooperators were encouraged to organize the FLDs on other technologies also. The proceedings were sent to the Ministry for administrative approval.

The Ministry conveyed revised administrative approval for organizing 1000 FLDs vide *letter F. No CPS 18-1/2019-NFSM dated 28 May 2019*. Accordingly, the administrative approval was conveyed to cooperating centres vide email no. *PD/TTT/FLD/2019-20 dated 01 June 2019*. Based on the confirmations of list of farmers, the following technical program was finalized for the year.

Frontline Demonstrations on Rice 2019-20

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
1.	Andhra Pradesh	Flood prone low land Irrigated	Ksheera (MTU 1172) flood tolerant rice variety Varam (MTU 1190) medium slender fine grain variety	20	Dr PV Satyanaryana, Principal Scientist (Rice), Dr M. Girija Rani, Senior Scientist (GPB), Dr BNVS Ravi kumar, Senior scientist (GPB) Acharya NG Ranga Agricultural University Regional Agricultural Research Station Maruteru-534122 psriceangrau@gmail.com, adr.godavarizone@gmail.com girija_aprri@yahoo.com 9490545888 9490195904	Ksheera (MTU 1172) - high yielding flood tolerant rice variety with 150 days duration, moderately tolerant to bacterial leaf blight, leaf blast, sheath rot and leaf spots, possess 2 weeks seed dormancy was identified by varietal release committee CVRC to release as Ksheera in 2018. Yield under floods: 4.5t/ha MTU 1190 (MTU 1081/Swarasub1) a high yielding fine grain rice variety with 140-145 days duration non lodging, moderately tolerant to leaf blast, neck blast, bacterial leaf blight, possess 2 weeks seed dormancy. Yield potential 6.5 -7 t t/ha
2.	Andhra Pradesh	Irrigated	BPT 2295 (2018)	4	Dr B Krishnaveni ARS Bapatla 522101 Andhra Pradesh 09494997701 09441721120 rrubapatla@gmail.com	Higher yield, BPH and Blast tolerance

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
3.	Andhra Pradesh, Telangana & Kerala	Irrigated	Integrated Weed Managment DRR Dhan 46 DRR Dhan 52	30	Dr. B. Sreedevi Principal Scientist, Indian Institute of Rice Research, Rajendranagar, Hyderabad-500030, sreedevi.palakalanu@gmail.com 9440089607	High yield, resource conservation, reduction in drudgery, reduced cost of cultivator
4.	Assam	Rainfed lowland	CR Dhan 909 CR Dhan 310	25	Dr. R. Bhagawati Principal Scientist & Officer In-charge (I/C) ICAR-NRRI-RRLRRS, Gerua, Hajo Kamrup-781102, Assam, 09436252487, Phone: +91-361-2820334 FAX: +91-361-2820370 rbhagawati@rediffmail.com	High yielding varieties Stress tolerance
5.	Bihar	Irrigated low land	Popularization of aromatic rice variety "CR Dhan 909" in the state of Bihar	10	Dr. Narayan Bhakta Dr. V. K. Yadav, ICAR Research Complex for Eastern Region, ICAR Parisar, P.O. Bihar Veterinary College, Patna-800014 (Bihar)	Higher yielder under irrigated ecosystem
6.	Chhattisgarh	Irrigated	CGZR1 CGZR2 Zincorice	10	Dr Girish Chandel IGKV Raipur 09340900521	Biofortified with zinc
7.	Chhattisgarh	Irrigated and shallow lowland	CG Sugandhitbhog, Dubraj Selection1, CG Devbhog, Tarunbhog selection 1, Badsahbhog selection 1, Vishnubhog selection 1	30	Dr. Sandeep Bhandarkar IGKV, Raipur, Chhattisgarh sandeep_bhandarkar2002@yahoo.com 9827167044	10% over local resistant to aerobic higher productivity

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
8.	Chhattisgarh (IGKVV)	Rainfed Shallow Lowlands	CG Rice Hybrid 2	10	Dr. Deepak Sharma, Indira Gandhi Krishi Vishwa Vidyalaya, Raipur deepakigkv@gmail.com	High yielding
9.	Chhattisgarh	Upland and transplanted	Samleshwari	5	Dr. Sonali kar SG College of Agriculture, Jagdapur Bastar, CG sonalika31@gmail.com 9424282716	High yielding
10.	Gujarat	Western region 6	Mahisagar GAR 14 (Scented variety)	20	Dr Prajapati, Main Rice Research Station , Anand Agriculture University, Nawagam, Gujarat rsrice_mrrs@yahoo.com 9429384207	Higher yield , medium slender grain resistant enhance the income of farmers and make them profitable Scented variety
11.	Gujarat	Irrigated & Rainfed ecosystem	GNR-5(long slender grain, salt tolerant), Purna (high yielding, suitable in upland condition) GNRH-1 (high yielding first rice hybrid of public sector in Gujarat) GNR 7 GNR 15	30	Dr. Pathik Kumar B. Patel Main Rice Research Centre, Navsari Agricultural University, ARU cross road, Navsari – 396450 gujaratpbb_swm@nau.in	The varieties/hybrid characterized high yielding, salt tolerant resistant to major pest and disease with good quality likely to be adopted by the farmers of the state
12.	Himachal Pradesh	Hill	HPR 2720, HPR 2795, HPR 2880, HPR 2656 with complete POP	5	Dr. B.S.Mankotia CSKHPKV-Malan 9459083612	nnew red rice variety for irrigated and upland condition for increasing income

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
13.	Jammu & Kashmir	Hill	Shalimar rice 4 & Shalimar rice 5 along with recommended package of practices	35	Dr. Manzoor ahmed Ganai , Mountain Research Centre for field crops SK University of Agricultural Science & Technology of Kashmir	25 % higher yield , easy/medium Threshability, better cooling quality resistant to blast and insect pests, 130-135 days duration from seed to seed, farmers preferred variety
14.	Jammu & Kashmir	Irrigated	Basmati 564, SJR 129 (Jammu Basmati) DSR	20	Dr. Anuradha Saha SKUAST-J, Chatha, J&K anuradha_agron@yahoo.co.in 9419202983	More yield, early maturity than checked variety reduction and drudgery the proposed FLDs are going to benefit rice farmers of eastern up
15.	Jharkhand	Rainfed upland	Sahbhagi Dhan Abhishek DRR Dhan 42 Weed Management in DSR	30	Dr B.C. Verma, Dr. S.M. Prasad, Dr. S. Bhagat Dr. Sudarsha Sekhar CRURRS, Hazaribagh bibhash.ssac@gmail.com 9863083855, 9065343014	Higher yield resistant to abiotic and biotic stress productivity increased income
16.	Jharkhand	Midland rainfed	BVD 203 , BVS -1, DRR Dhan 42, rice cultivation direct seeded technology	15	Dr. Krishna Prasad , i/c Rice Department of Plant Breeding & Genetics Kanke, Ranchi – 6 krishna_dumka@yahoo.co.in 9934199128	BVS-1 is aromatic , 125 days duration variety where as BVD 203 is also 125 days rice variety developed by BAU for mid land agro climatic condition
17.	Jharkhand	Rainfed lowland and mid land	DRR Dhan 42, CR Dhan-310, CR Dhan-311 (30 on Biofortified varieties)	40	Dr. Binay Kumar Singh, Senior Scientist, ICAR -Indian institute of Agricultural Biotechnology, Garhkhatanga , Namkum, Ranchi-834010	High yielding under drought stress, high protein in grain

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
18.	Karnataka	Irrigated	Alternate wetting and drying	5	Dr. BG Masthana Reddy, ARS, Gangavathi ARS, Gangavathi-583227, Karnataka, Koppal (dist) Bgmreddy2006@gmail.com 9448440518 08533270143	Save water to an extent of 25%
19.	Karnataka	Irrigated	Improved Samba Mahsuri (State release variety 2019)	5	Dr. Mahantasivayogayya ARS, Gangavathi ARS, Gangavathi-583227, Karnataka, Koppal (dist) mahant.shivayogayya2@gmail.com 39892	High yielding, blast resistant
20.	Karnataka	Irrigated	IPM in rice with latest variety	5	Dr Sujay Hurali ARS, Gangavathi ARS, Gangavathi-583227, Karnataka, Koppal (dist) morphosis77@gmail.com +918105427775	Eco friendly pest management practices
21.	Karnataka	Aerobic	Daksha , KMP-175 ICM	20	Dr. M. P Rajanna, Zonal Agricultural Research Station, V.C. Farm, Mandya, UAS, Bangalore, mprajanna@rocketmail.com,994 5900893	The new variety Daksha (KMP-175) saves water upto 40% compare to irrigated transplanted method with yield of 4.0-4.5 t/ha
22.	Karnataka	Irrigated	Alternate wetting and drying Direct seeding in Rice	10	Dr. G. R. Dinesh, AICRIP on Rice ZARS, VC Farm, Mandya, Karnataka-571405, grdenesh@rediffmail.com, 9448980134	Saving of irrigated water, enhance the rice yield, conserving the soil

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Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
23.	Karnataka	Irrigated	Rice yield maximization using IPNI nutrient expert system	10	Dr. Umesh H. R, AICRIP (Rice), ZARS, VC Farm, Mandya, Karnataka-571405 umeshhr1@rediffmail.com 9481191754	15-20% increase in yield
24.	Kerala	Double cropping	Rice farm mechanization	10	Dr. R. Ilangovan Professor & Head Division of Agronomy RARS, Pattambi679 306 ilangovan.r@kau.in	30% cost reduction, 20-25% yield enhancement
25.	Kerala	Irrigated	PTB 61 (Supriya), PTB 62 (Akshaya)	10	K. V. Faseela, Assistant Professor (Plant Breeding And Gen) Regional Agricultural Research Station, PATTAMBI, Palakad, Kerala-679306, faseela.kv@kau.in, 9947542929	High yield(7 t/ha) , multiple resistance (blast, sheath rot, whorl maggot), tolerance to moisture stress/high temperature , non lodging, long duration (135-140d)
26.	Kerala	Irrigated	KAU Pournami (MO23)	5	Dr. Ambily AK Rice Research Station, Monocompu, Thakkakkara PO Kerala, alappuzha dt., rrsmonocompu@kau.in	Higher yield Lesser duration than the popular variety by 10 days Resistance to gall midge Tolerance to acidity
27.	Kerala	Irrigated	Multi nutrient foliar mix application	5	Dr Vandana Venugopal Rice Research Station, Monocompu, Thakkakkara PO Kerala, alappuzha dt., rrsmonocompu@kau.in	Higher yield through essential nutrient application

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Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
28.	Kerala	Irrigated	Post emergent management of weedy rice using KAU Weed Wiper	5	Dr Nimmy Jose Rice Research Station, Monocompu, Thakkakkara PO Kerala, alappuzha dt., rrsmonocompu@kau.in	Reduction in the weedy rice, drudgery, higher yield, enhanced quality of harvested grains
29.	Kerala	Irrigated	Conservation of natural enemies – use of biopesticides and botanical insecticides	5	Dr Jyothy Sara Jacob Rice Research Station, Monocompu, Thakkakkara PO Kerala, alappuzha dt., rrsmonocompu@kau.in	Avoidance of chemical insecticides, reduction in cost of cultivation, increased natural enemies population
30.	Kerala	Irrigated	Management of glume discoloration	5	Dr Surendran Rice Research Station, Monocompu, Thakkakkara PO Kerala, alappuzha dt., rrsmonocompu@kau.in	Higher yield Improved grain quality Better seed germination
31.	Madhya Pradesh	Semi irrigated	JRB.1 JR 81 Improved Chinnore Improved Jeera Shanker	30	Dr. Uttam Bisen, college of agriculture/RARS, Balghat Murjhad, Waraseoni, dist. Balaghat, m.p - 481331	High yield Enhance productivity and income
32.	Maharashtra	Rainfed	Karjat 10 Karjat 9	20	Drs RL Kunkerkar, Mahendra P Gawai, RG Mardane, RARS Karjat M.S. mahendragawai76@gmail.com 09423454447	High yield due to high yield farmers willing more monetary returns

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Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
33.	Maharashtra	Rainfed	INM + High yielding varieties	5	Dr AS Dalvi, RARS Karjat, M.S. nntdalvi@gmail.com 9404302826	High yield due to high yield farmers willing more monetary returns
34.	Maharashtra	Rainfed upland/irrigated	Sakoli-9 and other BPH resistant varieties	5	Dr. G.R. Sham kumar Senior Rice Breeder, Agriculture Research Station, SAKOLI dist-Bhandara srb-skl@rediffmail.com 9403049472	20% yield advantage over local check variety, Moderate resistance to BL, BLB
35.	Maharashtra	Irrigated	Ratnagiri-8 (Notified in 2019 CVRC)	20	Dr. B.D.Waghmode Principal Scientist and Officer incharge, Agricultural Research Station, Shirgaon-415 629 Ratnagiri	higher yield than local check medium slender grain type with excellent cooking quality, Premium price
36.	Manipur	Irrigated	Sticky rice variety	5	Central Agricultural University	Higher yield and export potential
37.	Odisha	Shallow lowland	Popularization of Mrunalini & other recently released variety released by OUAT	10	Dr. D. N. Bastia, Department of Plant Breeding & Genetics, college of agriculture, OUAT, Bhubaneswar-751003, Odisha	As an alternative to Swarna in the shallow low land ecosystem
38.	Odisha	Rainfed shallow low land	Popularization of variety Hasantha & other recently released variety	10	Dr. Mihir Ranjan Mohanty, Junior breeder -cum-officer-in-charge, RRTTSS, OUAT Jeyapore, district-Koraput, Odisha, pin-764 001	BPH tolerant, during kharif 2017 Hasantha shows tolerant to bph in the eastern and northern part of Odisha, so it will be better to test it at southern part also as in southern part of Odisha the particular pest damage was observed in little but severe condition

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Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
39.	Odisha	Upland, lowland	All newly released varieties of NRRI , newly released hybrids of NRRI	50	Dr N C Rath, PS (Agril Extension), ECT Division, Central Rice Research Institute Cuttack 753006 ncrathcrri@yahoo.co.in 08093146925	Higher yield, higher protein content, higher zinc, resistance to disease/pest, good quality
40.	Puducherry	Irrigated	ADT 53	5	Dr V Sridevi, Asst Professor, Department of Agronomy, PAJANCOA, Karaikal 609603 srideviagr@gmail.com 09344833782	ADT 53 – 12% higher yield, Suitable for delayed monsoon/release of canal water
41.	Tamil Nadu	Irrigated	Popularization of newly released rice variety ADT 51 (15 FLDs) ADT 53(25 FLDs)	30	R. Suresh and D. Sassi Kumar Tamil Nadu Rice Research Institute, Tamil Nadu Agricultural University, Aduthurai-612101, Thanjavur sureshpbg@gmail.com 9489384427	ADT 51 - high yield with average of 6.3 tons/hA 10.0% yield advantage over CR 100G resistant to blast, moderately resistant to BLB ADT 53 – 12% higher yield
42.	Tamil Nadu	Irrigated	IPDM with ADT 51	10	Drs P Anandhi, D Sassikumar, Suresh Ilamathi Tamil Nadu Rice Research Institute, Tamil Nadu Agricultural University, Aduthurai-612101, Thanjavur srideviagr@gmail.com	high yield with average of 6.3 tons, economic and environmental benefit over conventional practices

Frontline Demonstration on Rice (2019-20)

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43.	Tamil Nadu	Irrigated	CO 52	30	Drs. R Pushpam, Saraswathi R, K Amudha Department of Rice Tamil Nadu Agricultural University, Coimbotore-641003 rice@tnau.ac.in	It has higher yield, 10% higher than bpt 5204 has good market remuneration bph and blast resistance when compared to BPT 5204 it has fine grain and cooling quality 135-140 days duration
44.	Tamil Nadu	Irrigated Upland	Latest IIRR technologies (DRR Dhan 44, DRR Dhan 45, DRR Dhan 49)	10	Dr. S. Arun Kumar Scientist, Extension Indian Institute of Rice Research Hyderabad 500 030 09246548340 arunwarnaraj@gmail.com (In collaboration with Farmer Producer Organisations)	Higher yield, cost reduction
45.	Tamil Nadu	Irrigated	TKM 13	10	Dr A Sheeba RRS Tirur arstirur@tnau.ac.in sheebateddy@gmail.com 09842005221	10 % higher yield
46.	Telangana	Irrigated Upland	Latest IIRR technologies (DRR Dhan 44, DRR Dhan 45, BINA Dhan 17, BRRI 75), DSR ICM	40	Dr N Vekateshwar Rao, Sreenivasa Reddy, J Vijay KVK Jammikunta neelamrao2000@gmail.com 09848573710 Dr. S. Arun Kumar Indian Institute of Rice Research Hyderabad	Higher yield, cost reduction

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
47.	Telangana	Irrigated Upland	Latest IIRR technologies (DRR Dhan 44, DRR Dhan 45) IPM	15	Dr MA Arifkhan, Dr Shankar Programme Coordinator KVK Kampasagar & Indian Institute of Rice Research Hyderabad Dr. S. Arun Kumar Indian Institute of Rice Research Hyderabad	Higher yield, cost reduction
48.	Telangana	Irrigated	Rice straw management and soil problem soil management	10	Dr. K. Surekha, principal scientist, soil science, ICAR-IIRR, RAJENDRA NAGAR, Hyderabad-500030, surekhakuchi@gmail.com, 9440963382, 040-24591221, 04024591217	Higher yield , soil quality improvement, residue utilization
49.	Telangana	Irrigated	GSR Varieties – BINA Dhan 17, BRRI 75	20	Drs C Gireesh, Abdul R Fiyaz, MS Anantha, Arun Kumar S ICAR-IIRR, Rajendra Nagar, Hyderabad-500030 giri09@gmail.com anugenes@gmail.com	Higher yield, low resource utilisation
50.	Telangana	Irrigated	Mechanization AWD Chemical Weed Management	20	Dr. P. Spandana Bhatt, Scientist(Agronomy), PJTSAU, ARI, Rice Research Centre, Hyderabad, Telangana 500005, spandana9119@gmail.com, 9705162962	Cost, drudgery reduction

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
51.	Telangana	Irrigated	WGL 347 WGL 739	15	Dr. U Nagabushanam/ Dr B Satish Chandra Regional Agricultural Research Station (RARS) PJ TSAU, WARANGAL - 506 007, T.S chandragene@gmail.com 9948990788.	Higher yield
52.	Telangana	Irrigated Ecology	SRI and water saving technologies	15	Dr. RM Kumar Principal Scientist and Head Agronomy Indian Institute of Rice Research, Hyderabad 30 Kumarrm213@gmail.com , 9440476493	20-30% yield advantage water stress condition
53.	Tripura	Lowland upland	Gomati, Tripura, Nirog, Tripura Chikandhan, Hakuchuk 2 Khara Dhan 1 +iCM	40	Dr. S.P. Das ICAR-NEH region, lembuchera, tripura drstdas@gmail.com 9436450747	15-20% increase lesser duration reduction and drudgery enhanced productivity and income
54.	Uttar Pradesh	Irrigated	Narendra sona, NDR 2101 INM,SSNM	25	Dr. S.P. Giri Masodha, Faizabad spgirinduat@gmail.com 8400097861	Higher grain yielding eastern up agro climatic condition adoption of SSNM ,INM will enhance the rice productivity the proposed FLDs are going to benefit rice farmers of eastern up

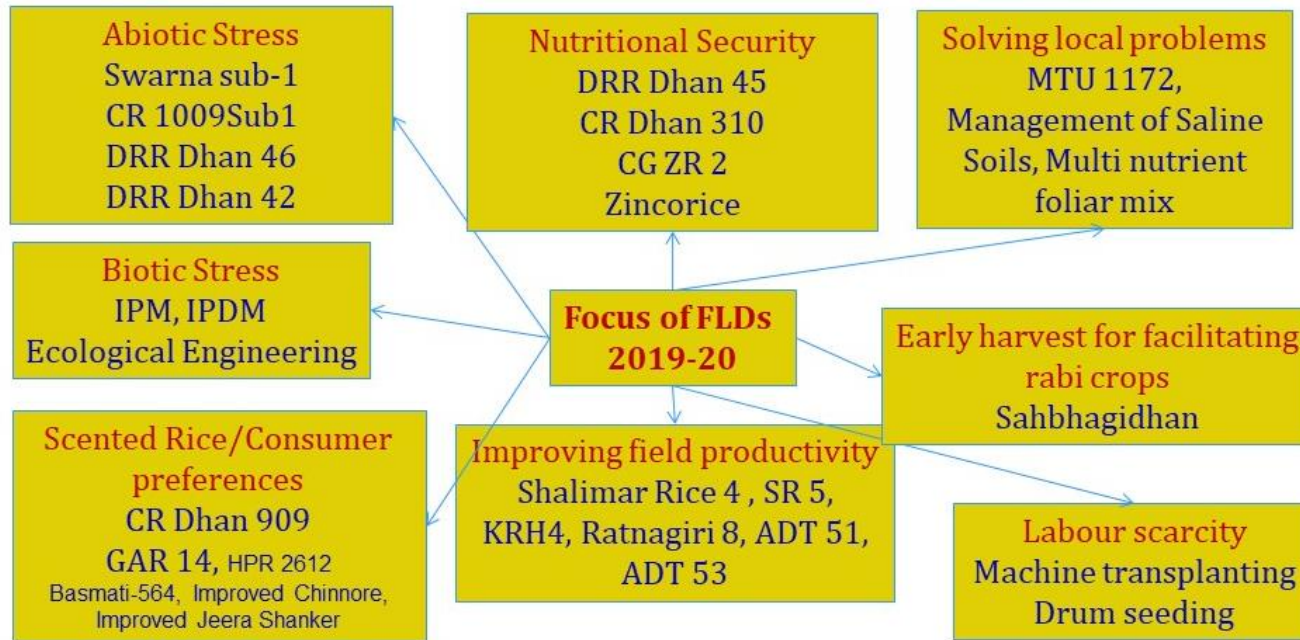
Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
55.	Uttar Pradesh	Irrigated condition	SHIATS-Dhan-3, SHIATS DHAN-4, SHIATS DHAN-5	10	Dr. Suresh Babu. G PROFESSOR & I/C AICRIP, DEPARTMENT OF GENETICS & PLANT BREEDING, NAINI AGRICULTURAL INSTITUTE, SHUATS, NAINI, ALLAHABAD, UP-211507 sureshgpb03@gmail.com 8887127606	Higher yield resistant
56.	Uttar Pradesh	Midland irrigated	Integrated Nutrient Management (INM), Appropriate Crop Establishment methods like Double Planting (Sunda Planting), Direct Sown Rice (DSR), Aerobic Rice Varieties- HUR 4-3, HUR-105, HUBR 2-1, Improved Samba Mahsuri, DRR-44 etc. HUBR 10-9	10	Dr. VK Srivastava Professor cum Sr. agronomist Department of agronomy, Institute of Agricultural Sciences BHU, Varanasi Vksrivastava_bhu@rediffmail.com 9415819900	Additional yeild advantageby adopting by adopting the recommended practices for transplanted rice in rspnse of inm and iwm and sunda planting ,recently drr44 has performed very well at farmers field having good weed competitive ability
57.	Uttar Pradesh (ACAES – Noida)	Irrigated	High yielding varieties	6	Dr. N. P. Singh, Director ACAES, Amity University npsingh@amity.edu	higher yield
58.	Uttarakhand	Irrigated	Latest varieties	5	Rice section, GBPUAT, PANTNAGAR, US NAGAR , UTTARAKHAND	Resistant to BLB, stem borer at 135days
59.	Uttarakhand	Hills	VL Dhan 48	5	Dr JP Aditya VPKAS, Uttarakhand	Higher yield

Frontline Demonstration on Rice (2019-20)

Centre No.	State and agency / organization	Ecosystem	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
60.	West Bengal	Rainfed/ irrigated	MUKTA SHREE, Sukumar, Goasaba 5, Gosaba 6, Rajdeep, Kanak Weed Management in DSR Machine Transplanting	40	Dr. Sangeet Sekhar Deb Rice Research Station Chinsurah, Hooghly isangeet.sd@gmail.com 08420244711	The technologies and varieties are supposed to increase the yield about 10 %-20% in farmers field with some value addition in grains
61.	West Bengal	RSL and upland	DHRUBA NOTIFIED 2016	5	Dr. G K Mallick & Dr. Vivekananda Mandi Rice Research Station , Bankura, WEST BENGAL RRSBANKURA@GMAIL.COM 9474184953	Sampriti - higher zinc and higher iron in brown rice enhance productivity
62.	West Bengal	RSL and upland	Resource conservation technology Nutrient experty	10	Dr Malay Kr Bhowmick JDA, Kolkatta bhowmick_malay@rediffmail.com , 9434239688	
63.	Across the country	Irrigated	Biofortified rice varieties	20	Dr CN Neeraja PS ICAR IIRR Rajendranagar Hyderabad cnneeraja@gmail.com 919705003663 914024591285	Nutritional security
			Total	1000		

Focus of Rice Frontline Demonstrations 2019-20



III. SUMMARY OF DEMONSTRATIONS CONDUCTED DURING 2019-20

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Andhra Pradesh	Irrigated	BPT 2295 (2018)	4	BPT 5204	Guntur	7.06	6.56	7.62
	Andhra Pradesh	Irrigated	Integrated Weed Management	10	Local practices with BPT 5204	Banavasi, Kurnool	6.91	5.98	15.55
	Andhra Pradesh	Flood prone low land	Ksheera (MTU 1172) flood tolerant rice variety	20	Swarna	Unguturu, Eluru, Mummidivaram, Yelamanchili, Kajuluru	6.35	6.23	1.93
	Andhra Pradesh	Irrigated	Varam (MTU 1190) medium slender fine grain vareity		BPT 5204, RGL2537, Improved Samba Mahsuri	Akiveedu, Pentapadu, Ungaturu, Jaggampeta, Dendalur, Gollaprolu	6.02	5.85	2.78
2.	Assam	Rainfed lowland	CR Dhan 310	2	Ranjit	Village: Bongalpara Block: Hajo District: Kamrup	6.5	4.9	32.65
	Assam	Rainfed lowland	CR Dhan 909 CR Dhan 310	23		Village: Bongalpara Block: Hajo District: Kamrup	Flood affected		
3.	Bihar	Irrigated low land	CR Dhan 909	10	Basmatiya, Swarna	Madhubani, Buxar district	5.47	4.35	25.86
4.	Chhattisgarh	Rainfed Shallow Lowlands	IGKV R 1	2	Local varieties	Block- Saja, Abhanpur	5.34	4.69	13.86

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Chhattisgarh	Rainfed Shallow Lowlands	Indira Aerobic 1	5	Local varieties	Block- Saja, Abhanpur, Arang	4.18	3.74	11.76
	Chhattisgarh	Rainfed Shallow Lowlands	CG Devbhog	21	Local varieties	Block- Saja, Abhanpur, Arang, Patan	4.42	3.91	13.04
	Chhattisgarh	Rainfed Shallow Lowlands	CG Sugandhit Bhog	2	Local varieties	Block- Patan	4.65	4.10	13.41
	Chhattisgarh	Rainfed Shallow Lowlands	KRH 4	8	Local varieties	Khapri (Taluka: Girhola, District: Durg) Teliyapuran (Taluka: Semarsal, District: Mungel) Nawagarh (Taluka: Nawagarh District: Bemetara)	4.66	4.26	9.39
	Chhattisgarh	Upland	Samleshwari	5	Chudi dhan	Villages- Tirathgarh and Bademarenga District- Bastar	4.2	2.5	68.00
	Chhattisgarh	Irrigated	CGZR1, CGZR2 Zincorice	2			Results awaited		
5.	Gujarat	Irrigated	GNR-5	4	Jaya	Navsari	5.23	4.69	11.51
	Gujarat	Irrigated	GNR-7	26	GR 11	Navsari	5.18	4.48	15.63

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Gujarat	Irrigated	Mahisagar	10	Local Varieties	Kheda, Ahmedabad, Anand, Mahisagar, Dahod	4.90	4.43	10.61
	Gujarat	Irrigated	GAR-14	10	Local Varieties	Kheda, Ahmedabad, Anand, Baroda, Gandhinagar, Sabarkantha	4.45	3.70	20.27
6.	Himachal Pradesh	Hill	'HPR 2880' with complete POP	5.17	HPR 2143 and local	Rait, Nagrota Bhagwan, and Baijnath blocks of Kangra district	3.76	2.78	35.25
	Himachal Pradesh	Hill	HPR 2612 (scented rice) with complete POP	1.0	RP 2421	Baijnath & Nagrota blocks of Kangra district	3.58	2.70	32.59
	Himachal Pradesh	Hill	HPR 2795 with complete POP	0.83	Local	Rait block of Kangra district	3.19	2.53	26.09
	Himachal Pradesh	Hill	"HPR 2656' upland rice variety with complete POP	1.0	Local	Rait block of Kangra district	3.06	2.47	23.89
7.	Jammu and Kashmir	Hills	Shalimar Rice 4 (for lower altitudes)	31.4	Jehlum, SR1, SR2, SR3	Anatnag, Kupeara, Ganderbal	7.39	6.17	19.77
	Jammu and Kashmir	Hills	Shalimar Rice 5 (for higher altitudes)	3.6	K332	Anatnag	5.16	4.13	24.94

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Jammu and Kashmir	Hills	Basmati-564	14	Basmati - 370	Taluka: R.S. Pura District: Jammu	3.41	2.42	40.91
	Jammu and Kashmir	Hills	SJR-129	6	Basmati - 370	Taluka: R.S. Pura District: Jammu	3.70	2.43	52.26
8.	Jharkhand	Rainfed drought prone	Sahbhagi Dhan with DSR	10	Lalat	Ramgarh, Hazaribagh, Chatra and Koderma	4.2	3.2	31.25
	Jharkhand	Rainfed drought prone	IR 64 Drt.1 with DSR	10	Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.0	4.0	25.00
	Jharkhand	Rainfed drought prone	Abhisekh with DSR	10	Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.2	4.0	30.00
	Jharkhand	Rainfed	DRR Dhan 42 under aerobic cultivation	35	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.33	3.0	11.00
	Jharkhand	Rainfed	CR Dhan 310	5	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.43	3.0	14.33
	Jharkhand	Rainfed lowland	BVS-1, IR-64 drt-1, Sahbhagidhan and BVD-110	15	Local var.	Vill. Kanjgi Block: Chanho Dist. Ranchi	3.9	3.2	21.88
9.	Karnataka	Irrigated	AWD with HYV	10	Farmers' practices	Mandya and Tumkur districts	5.37	5.03	6.76

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Karnataka	Irrigated	Daksha (KMP-175) under aerobic conditions	10	Rasi	Mandya & Mysore District	5.00	4.00	25.00
	Karnataka	Irrigated	B.R.R.I. Dhan-75	3	Local varieties	Mandya District	5.50	4.00	37.50
	Karnataka	Irrigated	BINA Dhan-17	2	Local varieties	Mandya District	5.75	4.00	43.75
	Karnataka	Irrigated	Alternate wetting and Drying method of irrigation in rice (with HYV)	5	Continuous flooding	Sriramanagar, Baragur	7.01	6.74	4.01
	Karnataka	Irrigated	Improved Samba Mahsuri	5	BPT-5204	Herur, Sriramanagar, Basavanna camp (Koppal Dt)	7.23	7.11	1.69
	Karnataka	Irrigated	IPM in rice	5	Local practices	Village : Sriramanagar Taluka: Gangavathi District:Koppal	7.52	7.26	3.58
10.	Kerala	Irrigated lowland	KAU Akshaya	8.0	Uma, Ponmani	Palakkad, Idukki, Thrissur	6.75	6.00	12.50
	Kerala	Irrigated lowland	KAU Supriya	2.0	Uma	Palakkad	6.53	5.61	16.40

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Kerala	Irrigated	MO 23 (Pournami)	5	Mo 16 (Uma)	Nedumudi & Kainakary village, Chambakulam block, Kuttanad Thaluk, Alappuzha district	6.33	5.32	20.13
	Kerala	Irrigated	Multi nutrient foliar mix (Sampoorna developed by KAU)	5	Uma + without micronutrient application	Naluchira padasekharam Purakad Ambalapuzha Alappuzha	6.2	4.8	18.98
	Kerala	Low land	'KAU Weed Wiper'	5	Mo 16 UMA	Alappuzha	4.6	3.7	29.17
	Kerala	Wetland paddy under below sea level system	Management of glume discolouration disease	5	Mo 16 (Uma)	Naluchira padasekharam, Purakkad, Ambalapuzha, Alappuzha	5.77	4.16	24.32

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Kerala	Low land	Conservation of natural enemies for the management of insect pests in rice	5	Mo 16 (Uma)	Champakkulam, Kuattanad, Alappuzha	3.87	4.82	-19.71 (Reduction in the use of chemical insecticides and population build up and conservation of natural enemies in the field)
11.	Madhya Pradesh	Irrigated	JRB 1	10	MTU 1010	V.Koste ,Bl. Waraseoni, Dist. Balaghat	5.27	4.53	16.34
	Madhya Pradesh	Irrigated	JR 81	8	MTU 1010	V.Botta Hajari ,Bl. Lalburra, Dist. Balaghat	5.37	4.54	18.28
	Madhya Pradesh	Rainfed	Improved Chinnore	6	Jai sree Ram,Sonam	V.Garra ,Bl. Lalburra,Dist. Balaghat 2	2.26	3.97	-43.07
	Madhya Pradesh	Rainfed	Improved Jeera Shanker	6	Jai sree Ram, Sonam	V.Nilji ,Bl. Lalburra,Dist. Balaghat	2.97	4.05	-26.67
12.	Maharashtra	Rainfed	Karjat 9	5	Local varieties	Raigad, Karjat	4.18	3.62	15.47
	Maharashtra	Rainfed	Karjat 10	5	Local varieties	Karjat, raigad	4.75	4.23	12.29

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Maharashtra	Rainfed	Sakoli-9	5	Local varieties	Jambhili Sadak, Sakoli Tk, Bhandara Dt	4.25	3.55	19.72
	Maharashtra	Irrigated	Ratnagiri-8 (Notified in 2019 CVRC)	20	Swarna	Palghar, Raigad, Ratnagiri, Sindhudurg	5.76	4.49	28.29
13.	Manipur	Hills	RCM 13 RCM 7	5	Kumbiphou local land race	Kumbi village cluster, Bishnupur district	4.73	3.49	32.6
14.	Odisha	Shallow lowland	Pratikshya	8	Local varieties		4.99	4.73	5.50
	Odisha	Shallow lowland	Hasanta	2	Local varieties		5.66	4.97	13.88
	Odisha	Irrigated	CR Dhan 100	50	Local varieties	Jajpur Cluster	4.13	4.01	2.99
	Odisha	Irrigated	CR Dhan 101		Local varieties	Kendrapada Cluster, Cuttack Cluster, Odapada-Dhenkanal Cluster	4.27	3.87	10.34
	Odisha	Irrigated	CR Dhan 201		Local varieties	Jajpur Cluster	4.31	3.85	11.95
	Odisha	Irrigated	CR Dhan 203		Local varieties	Jajpur Cluster	4.11	4.00	2.75
	Odisha	Irrigated	CR Dhan 204		Local varieties	Jajpur Cluster	4.28	3.95	8.35

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Odisha	Irrigated	CR Dhan 205		Local varieties	Kendrapada Cluster, Cuttack Cluster, Odapada-Dhenkanal Cluster	4.23	3.93	7.63
	Odisha	Irrigated	CR Dhan 206		Local varieties	Dhenkanal cluster	5.03	4.25	18.35
	Odisha	Irrigated	CR Dhan 304		Local varieties	Dhenkanal cluster	5.00	4.25	17.65
	Odisha	Irrigated	CR Dhan 306		Local varieties	Dhenkanal Sadar-Dhenkanal cluster	6.00	4.80	25.00
	Odisha	Irrigated	CR Dhan 310		Local varieties	Dhenkanal Cluster, Cuttack Cluster, Kendrapada cluster	4.73	4.25	11.29
	Odisha	Irrigated	CR Dhan 311		Local varieties	Jajpur cluster	4.90	4.30	13.95
	Odisha	Irrigated	CR Dhan 601		Local varieties	Jajpur cluster	5.24	4.35	20.46
	Odisha	Rainfed Shallow Lowland	Hasanta	10	Swarna	At/PO-Bhakar Sahi Block- Balipatna Dist- -Khordha	5.39	4.50	19.78
15.	Tamil Nadu	Irrigated	ADT 51	15	CR 1009	Ariyalur, Thanjavur, Thiruvarur, Nagapattinam	6.42	5.82	10.31

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Tamil Nadu	Irrigated	ADT 53	15	ADT 43 and CO 51	Thanjavur, Thiruvarur, Nagapattinam	6.09	5.46	11.54
	Tamil Nadu	Irrigated	IPDM with ADT 51	10	Farmers Practices	Nannilam block of Thiruvarur and Nagapattinam districts	5.97	4.12	44.90
	Tamil Nadu	Irrigated	CO 52	30	Improved White Ponni, TKM 13, CO (R) 50, CO 43, ADT (R) 46, BPT 5204	Trichy, Dindigul, Villupuram and Theni	6.60	5.69	15.99
	Tamil Nadu	Irrigated	Improved Samba Mahsuri	3	BPT 5204	Lalgudi	4.03	3.5	15.14
	Tamil Nadu	Irrigated	DRR Dhan 44	2	BPT 5204	Lalgudi	3.96	3.5	13.14
	Tamil Nadu	Irrigated	TKM 13	10	BPT 5204	Thiruvallur	5.61	4.95	13.33
16.	Telangana	Irrigated lowland	Mechanized transplanting	10	Manual transplanting	Thudukurthy, Nandiwaddeman, Yendabetla, Nallavelli, Khanapur villages of Nagarkurnool and Kothathanda village of Mahabubnagar	6.72	6.50	3.3
	Telangana	Irrigated lowland	AWD in rice	5	Field submergence	Peedshapur Burjugadda tanda	6.13	5.91	3.7

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Telangana	Irrigated lowland	Chemical weed management	5	Hand weeding	Peedshapur Burjugadda tanda	6.2	6.0	3.3
	Telangana	Irrigated	Integrated Weed Management + DRRDhan46	10	Local practices	Karimnagar	5.79	5.09	13.75
	Telangana	Irrigated	Integrated Crop Management + JGL – 24423	10	MTU 1010	Karimnagar	7.03	6.88	2.18
	Telangana	Irrigated	IPM + BRRI 75	10	MTU 1010	Karimnagar	7.01	6.85	2.34
	Telangana	Irrigated	Direct sown rice through Drum seeder + BINA - 17	10	Conventional practices + KNM 118	Karimnagar	7.00	6.80	2.94
	Telangana	Irrigated	RNR 15048	5	BPT 5204	Agamothukur and Gurrappagudem	6.53	5.83	12.01
	Telangana	Irrigated	BRRI 75	5	BPT 5204	Agamothukur and Gurrappagudem	6.30	5.77	9.19
	Telangana	Irrigated	KNM 118	5	BPT 5204	Agamothukur and Gurrappagudem	7.07	6.37	10.99

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Telangana	Irrigated	WGL 44 (Siddhi)	10	BPT -5204	Paidipally Nagaram village of Parkal mandal, Warangal Rural district, Telangana	7.0	5.60	25
	Telangana	Irrigated	WGL 915 (Warangal Rice 1)	4	MTU 1001	Kanaparthi village, Regonda mandal of Jayashankar Bhupalpally district, Telangana	6.46	5.77	11.86
	Telangana	Irrigated	CGZR 2	5	BPT 5204	Mahabubnagar	4.88	3.50	39.43
	Telangana	Irrigated	Protozin			Mahabubnagar	4.70	3.50	34.29
	Telangana	Irrigated	Zincorice			Mahabubnagar	3.74	3.50	6.86
	Telangana	Problem Soils	Sodic soil management	10	Local practices	Chandepally village, Motakondur mandal of Yadadri district	6.75	4.92	37.20
17.	Tripura	Irrigated	Gomati, Tripura Nirog ICM	40			Results awaited		
18.	Uttar Pradesh	Irrigated	Narendra Sona	10.4	NDR 359	Gonda, Ayodhya	5.28	3.92	34.69
	Uttar Pradesh	Irrigated	Sambha Sub-1	3.2	BPT 5205, NDR 359, Sarjoo 52	Azamgarh, Ayodhya, Gonda	5.19	3.95	31.39

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	Uttar Pradesh	Irrigated	Sambha Sub-1/ INM	3.6	Jal Lahri, NDR 359, BPT 5204	Ayodhya	5.08	3.75	35.47
	Uttar Pradesh	Irrigated	NARENDRA SONA/ INM	2	BPT 5204, NDR 359, Sarjoo 52	Ayodhya	5.09	4.02	26.62
	Uttar Pradesh	Irrigated	NDR 2101/ New Variety	4.2	Sambha Mahsuri, NDR 359	Ayodhya, Palpura	5.4	3.86	39.90
	Uttar Pradesh	Irrigated	NDR 2101/ INM	1.6	NDR 359	Ayodhya, Palpura	5.36	3.75	42.93
	Uttar Pradesh	Irrigated	SHIATS Dhan 1	3	NDR 359 Sonam	Pragyaraj	5.56	4.35	27.82
	Uttar Pradesh	Irrigated	SHIATS Dhan 3	3	NDR 359 Sonam	Pragyaraj	5.30	4.35	21.84
	Uttar Pradesh	Irrigated	SHIATS Dhan 5	4	NDR 359 Sonam	Pragyaraj	5.39	4.60	17.17
	Uttar Pradesh	Irrigated	Pusa 1718	3	Pusa 1121	Gautam Budh Nagar	5.54	5.09	8.84
	Uttar Pradesh	Irrigated	Pusa-1509	3	Pusa 1121	Gautam Budh Nagar	5.28	5.09	3.73
19.	Uttarakhand	Irrigated	VL Dhan 68	5	Thapachini, China 4, Taichung	Toonakoat, Tipola, Block-Tarikhet , District- Almora	4.17	3.42	21.86
20.	West Bengal	Irrigated up/medium Land	Improved Variety - Manisha	1.0	Jamuna	Vill:Manashree Block - Udaynarayanpur, Distt – Howrah	4.95	3.60	37.5

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	West Bengal	Irrigated up/medium Land	Improved Variety – Bhupesh	1.0	Pratiksha	Do - Khorda Itarai, Block - Udaynarayanpur, Distt – Howrah	5.40	4.50	20.0
	West Bengal	Irrigated up/medium Land	Ajit	1.0	Pratiksha	Vill:Uttar Harishpur Block - Udaynarayanpur, Distt – Howrah	5.10	3.70	37.8
	West Bengal	Irrigated medium Land	Improved Variety – Sukumar	3.0	Shatabdi	Vill- Patra Vitasin, Block – Pandua, Dist – Hooghly	4.03	3.31	21.5
	West Bengal	Irrigated medium Land	Improved Variety – Mukdashree	1.0	Swarna	Vill- Canpahati Block – Pandua, Dist – Hooghly	4.65	4.13	12.7
	West Bengal	Irrigated medium Land	Improved Variety – Mukdashree	3.0	Pratiksha	Vill. Kamargeria Block Ranaghat - 2 Dt.Nadia	3.17	2.55	24.3
	West Bengal	Rainfed Shallow Lowland	Improved Variety – Swarnali	1.0	Swarna	Vill- Ranagar, Block – Pandua, Dist – Hooghly	4.74	4.19	13.0
	West Bengal	Rainfed Shallow Lowland	Improved Variety – Amala	1.0	Swarna	Vill-Katagora, Block- Dhaniakhali, Dist- Hooghly	5.10	4.65	9.68
	West Bengal	Rainfed Semideep	Improved Variety – Sujala	1.0	Swarna	Vill-Katagora, Block- Dhaniakhali, Dist- Hooghly	4.87	3.90	24.8

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	West Bengal	Rainfed Semideep	Improved Variety – Kanak	1.0	Meghi	Vill.Paharpur Block-Ranaghat-1 Dt. Nadia	4.60	2.75	67.2
	West Bengal	Coastal Saline Land (Rainfed Shallow)	Improved Variety – Gosaba 5	1.0	Swarna	Vill- Kirtankhali, Block – Sagar, Dist - 24 Parganas (South)	Crop was damaged by inundation due to cyclone ‘Bulbul’		
	West Bengal	Coastal Saline Land (Rainfed Shallow)	Improved Variety – Gosaba 6	1.0	Swarna	Vill- Pakhirala, Block- Gosaba, Dist - 24 Parganas (South)	4.60	3.70	24.3
	West Bengal	Coastal Saline Land (Rainfed Shallow)	Improved Variety – Rajendra Mashuri	1.0	CR 1017	Vill- Sonaga, Block- Gosaba, Dist - 24 Parganas (South)	4.57	3.55	28.73
	West Bengal	Irrigated Medium / Shallow Land	Machine Transplanter	8.0	Manual Transplntng	Vill-Balidanga, Block- Dhaniakhali, Dist- Hooghly	4.84	3.87	25.06
	West Bengal	Irrigated Medium / Shallow Land	Dry DSR	5.0	Manual Transplntng	Vill- Gobindapur, Block- Ausgram– I, Dist- Purba Bardhaman	6.10	5.60	8.9
	West Bengal	Irrigated / Rainfed Shallow Land	Integrated Pest Management	4.0	Farmers’ Practice	Vill- Pakri, Block- Pandua, Dist- Hooghly	4.22	3.5	20.57

Frontline Demonstration on Rice (2019-20)

S No	State and agency / organization	Ecosystem	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	West Bengal	Irrigated / Rainfed Shallow Land	Integrated Disease Management	4.0	Farmers' Practice	Vill : Digsui, Block: Chinsurah Mogra, Dist- Hooghly	4.7	3.93	19.59
	West Bengal	Irrigated / Rainfed Shallow Land	Integrated Weed Management	1.0	Farmers' Practice	Vill- Lahiripur, Block- Gosaba, Dist - 24 Parganas (South)	4.40	3.20	37.5
	West Bengal	Irrigated / Rainfed Shallow Land	Organic Rice	1.0	Farmers' Practice	Vill- Dayapur, Block- Gosaba, Dist - 24 Parganas (South)	4.20	3.50	20.0
	West Bengal	Irrigated	Resource Conservation Technology (with Sahabagidhan and DRR Dhan 42)	7	Conventional practices	Purulia	4.56	3.97	14.82
	West Bengal	Irrigated	Site-Specific Nutrient Management Nutrient Expert (with Sahabagidhan and DRR Dhan 42)	3	Conventional practices	Purulia	4.49	4.0	12.27
				852			5.13	4.38	17.22

Andhra Pradesh

In **Andhra Pradesh**, rice is grown in all the districts. It is evident that the productivity of undivided state has gone up considerably due to adoption of high yielding varieties and improved package of practices. About 64% rice growing districts in the state are having high productivity status. If the impact is made in low productivity areas of Andhra Pradesh, the production can be increased vertically without expansion of area under rice.

S No	Technologies to be demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	BPT 2295 (2018)	4	BPT 5204	Guntur	7.06	6.56	7.62
2.	Integrated Weed Management	10	Local practices with BPT 5204	Banavasi, Kurnool	6.91	5.98	15.55
3.	Ksheera (MTU 1172) flood tolerant rice variety	10	Swarna	Unguturu, Eluru, Mummidivaram, Yelamanchi, Kajuluru	6.35	6.23	1.93
4.	Varam (MTU 1190) medium slender fine grain variety	10	BPT 5204, RGL2537, Improved Samba Mahsuri	Akiveedu, Pentapadu, Ungaturu, Jaggampeta, Dendalur, Gollaprolu	6.02	5.85	2.78

Agricultural Research Station, Bapatla conducted four FLDs on Popularization of Bapatla Mahsuri (BPT 2295). This new variety tolerant to blast & BPH was demonstrated in blast endemic areas of Guntur district. It has performed well against the traditionally grown BPT 5204. Also, it has surpassed the average yield of the state (5.16 t/ha) and district (6.68 t/ha).

Andhra Pradesh Rice Research Institute, Maruteru (APRRI & RARS) conducted 20 FLDs on Ksheera (MTU 1172) and Varam (MTU 1190). Ksheera (MTU 1172) is a high yielding flood tolerant rice variety with 150 days duration, moderately tolerant to bacterial leaf blight, leaf blast, sheath rot and leaf spots, posses 2 weeks seed dormancy and has yield potential of 4.5t/ha. MTU 1190 is a high yielding fine grain rice variety with 140-145 days duration non lodging, moderately tolerant to leaf blast, neck blast, bacterial leaf blight and yield potential of 6.5 -7 t t/ha. Both these varieties performed better than the local check varieties.



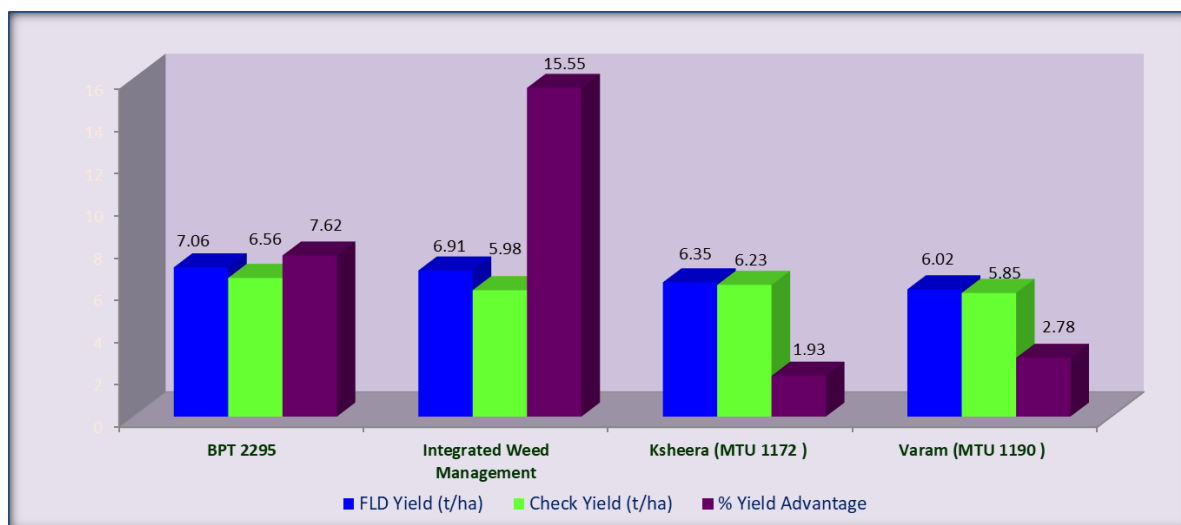
ఎంటీయా 1190 రకానికి ఎండాకు తెగులు ఆశించడు

గొల్లడ్రోలు హారల్, అగస్టు 21: ఎంటీయా 1190 రకం వరిపంటకు ఎండాకు తెగులు ఆశించడని మార్కెట్ మ్యూసోయం కాఖ శాస్త్రవేత్తలు ఎంగురూరాలో, జీనుజాత అగ్రారు. గొల్లడ్రోలులో వీవీవీ 5204కు ప్రత్యామ్నాయంగా సాగుచేసిన పంటను బుడవారు పరిశీలించారు. పంటల తీరును పరిశీలించిన అనంతరం వారు మాట్లాడుతూ 5204 రకం చాలాకాలం నైతులు పడిందని చెప్పారు. వా తావరణ పరిస్థితుల కారణంగా ఈ రకానికి ఎండాకు తె గులు ఎక్కువగా ఆశించడం వల్ల దిగుబడులపై ప్రభావం చూపేదన్నారు. దీనికి ప్రత్యామ్నాయంగా 1190 రకంను ప్రయోగాత్మకంగా గొల్లడ్రోలు, కొత్తేని కోన, కాఖావారు మండలాల్లో రెండేని ఎడరాల పంటను సాగు చేయిస్తూ



వరిపంటకు పరిశీలిస్తున్న మార్కెట్ మ్యూసోయం శాస్త్రవేత్తలు

స్పష్టం చెప్పారు. నాట్ల వేసిన తరువాత పొలంలో కేపట్ల వ యోజనావ్యాప్త పద్ధతులు, ఎరువులు వేసిన వివరాలు సేకరించారు. దుబ్బుకు ఉన్న పంటలను రెట్టింపారు. సాగులో నైతులకు మెలకువలు వివరించారు. ఆంధ్రప్రదేశ్, పత్తీనముల్, మహారాష్ట్ర, తెలంగాణ, తమిళనాడు రాష్ట్రాల్లో అమ్మదయ నైతులలో ప్రయోగాత్మకంగా సాగు చేస్తున్నట్లు చెప్పారు. ఎప్పుడొకప్పుడు నైతులలో రెటిని, వివిధ దశల్లో పంట పరిస్థితులను అంచనా వేస్తున్నట్లు వారు వివరించారు. ఖరీఫ్లో 40 రోజులకు, రబీలు 125 రోజులకు ఈ పంట చేతికొస్తావన్నారు. ఎకరాకు 36 నుంచి 40బస్తల దిగుబడు వస్తుందని చెప్పారు. కొద్దమందిలో మండల వ్యవసాయాధికారి, వినవీన తదితరులున్నారు.



Indian Institute of Rice Research, Hyderabad in collaboration with KVK, Banavasi organized demonstration on Integrated Weed Management in the farmers' field plots of K. Nagalapuram, Mugati, Panyam, Venkatapuram, Kurupadu, Chinnatumbalam, Yemmiganuru. The demonstration practice on Integrated Weed Management (IWM) comprised judicious combination of various crop management practices viz., summer ploughing, stale seedbed practice, selection of suitable fine grain high yielding variety, recommended seed rate, use of pre-sowing herbicide application, pre-emergence followed by post-emergence herbicide use, top dressing required and recommended quantity of nitrogen using leaf color chart.

Using IIRR High Yielding Variety (RPBio226) and recommended seed rate of 50 kg/ha for robust nursery instead of prevailing practice of high seed rate(70 kg/ha); the pre-sowing herbicide application of Glyphosate 15 Days Before Planting; application of Oxadiargyl at 7 Days After Planting (DAT) followed by Chlorimuronethyl + metsulfuronmethyl at 25 DAT in some fields; application of Penoxsulam at 12-15 DAT in some fields depending on the weed flora and intensity; top dressing of nitrogen based on leaf color chart of IIRR, Hyderabad (saving of 25-30 kg nitrogen); need based application of plant protection chemicals instead of blanket application; water proof tarpaulin for protecting quality of harvested paddy. By undertaking all these interventions, the farmers achieved monetary benefit mainly by reducing the input cost which has reflected in higher yields. Adoption of new IIRR variety and Integrated Weed Management helped the farmers to achieve the grain yield advantage of 6.49 to 26.79%, fodder yield advantage of 4.81 to 33.82% that resulted in monetary advantage of 55%. To upscale the benefits of undertaken FLD programme, field day and Farmers Scientist interface was organized which has attracted the local media, big gathering of rice and non-rice farmers.



అధిక రసాయన ఎరువుల వాడకం అనర్థదాయకం

• పరిశోధన సంస్థ ప్రధాన శాస్త్రవేత్త డాక్టర్ శ్రీదేవి

మొగ్గనూరుకుకూడల్: అధిక దీనివలన రోసం వైరులు ఎక్కువగా రసాయన ఎరువులు వాడకం అనర్థమని హైదరాబాద్ వెంచర్ పరిశోధన సంస్థ ప్రధాన శాస్త్రవేత్త డాక్టర్ శ్రీదేవి అన్నారు. ఐసదాన్ కృషి విజ్ఞాన కేంద్రంలో పరిశోధన సౌకర్యం వైరులను వివరించారు. ఈ సందర్భంగా ఆమె మాట్లాడుతూ, పరిశోధన కేంద్రం ప్రధాన భాగం పరిశోధన ద్వారా ఎరువులు వాడకం వారికి నూరించారు. కీలక సమాచారం తీసుకోవడా, వ్యవసాయాధికారులు, శాస్త్రవేత్తలను వివరించి రసాయన ఎరువులను వారు



శిల్పంలో మాట్లాడుతున్న శాస్త్రవేత్త డాక్టర్ శ్రీదేవి

కోవారి తెలిపారు. శ్రీమతి సోనల్ తెగల్య తిరుద తక్కువగా ఉంటుందన్నారు. సూతన పరిశోధనలో పాటు సాంకేతిక పద్ధతులను తెలుసుకోవాలని ఆమెకు ఉండవచ్చు. అవసరం అయితే ఐదేం 205 అనే యం సాంధ్య మనం పరిశోధన పరిశోధించారు, ఐసదాన్ కేంద్రం

ప్రొఫెసర్ కో-అసిస్టెంట్ డాక్టర్ ప్రసాద్ మాట్లాడుతూ అధిక రసాయన ఎరువులను ఈ కార్యక్రమంలో పరిశోధన సంస్థ శాస్త్రవేత్తలు డాక్టర్ శ్రీదేవి, డాక్టర్ పద్మావతి, డాక్టర్ లక్ష్మి ప్రసన్న, డాక్టర్ శ్రీలక్ష్మి, కేంద్ర శాస్త్రవేత్తలు రామచంద్రదాస్ రి, సైతం, వీందు ప్రవీణ, సన్నా తదితరులు పాల్గొన్నారు.

ANNEXURE - V

FINAL REPORT ON FRONTLINE DEMONSTRATION

1.	Crop	Paddy
2.	Season	Kharif
3.	Technology being demonstrated	Blight tolerant IRR variety (RPBio226); chemical weed control (Pre sowing glyphosate 2.5l/ha 15DBT preemergence Oxadiargyl fb postemergence chlorimuronethyl+metsulfuronmethyl,penoxsulam);
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	Blight tolerance and BPH to some extent; economic and timely weed control by application of one preemergence and one postemergence herbicide
4.	Location (with full address)	Village: Banavasi, yemmiganur rural District: Kurnool State: AndhraPradesh
5.	Category of beneficiary farmers: a. Name with Father's /Husband Name : b. Medium/Small/Marginal/Women : c. SC/ST/General	-
6.	Area under demonstration (ha)	10ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Irrigated
8.	Field Condition (a) Topography (b) Soil Type (c) Native nutrient status Any other information about field condition	Black soils

Particulars	FLD Plot	Check – Farmers' practice Plot
(i) Variety/Hybrid	Rp-Bio-226	BPT-5204
(ii) Seed rate	50	75
(iii) Source of Seed	IIRR, Hyderabad	Local
(iv) Seed treatment	Carbendazim 3gm/kg of seed	
(v) Sowing date	07-08-2019	07-08-2019
(vi) Nursery details seeding density in nursery etc.	FeSO ₄ -1kg	
(vii) Transplanting date	08-09-2019	08-09-2019

Frontline Demonstration on Rice (2019-20)

(viii) Spacing	20x15cm	random
(ix) Plant population maintained per ha.	50 hills/ha	65hills/m ²
(x) FYM/compost applied	10 t/ha	5 t/ha
(xi) Fertilizers applied (a) Basal (NPK kgs/ha) (b) Top dressing : Number of times & stage (NPK kg/ha)	100-100-50 200-0-50 Nitrogen-3 Splits: 1 st - Basal, 2 nd - Tillering and 3 rd - Panicle initiation Phosphorus- Basal Potash-2 Splits: 1 st - Tillering and 2 nd - Panicle initiation	100-100-50 200-0-50 Nitrogen-3 Splits: 1 st - Basal, 2 nd - Tillering and 3 rd - Panicle initiation Phosphorus- Basal Potash-2 Splits: 1 st - Tillering and 2 nd - Panicle initiation
(xii) Micro-nutrient used if any (name/quantity)	ZnSo ₄ -400 gm	ZnSo ₄ -400 gm
(xiii) Weed control (a) Herbicides used (name/quantity) Inter-culture operations (Number)	*Oxadiargyl @125 g/ha at 7DAT *Metsulfuron+chlorimuronet hyl@20g/ha at 25-30 DAT in 5 fields ; penoxsulam@100 ml/ha in 5 fields	Manual Weeding 2 times at 20-25 DAT and 45-50DAT
(xiv) No. of irrigation given(crop stage-wise)	10	10
10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(a) Insect pest	Minor incidence of leaf folder and stem borer	Stem borer, BPH and leaf folder
(i) Name of the pest observed		
(ii) Extent of damage (%)		5-7 %
(iii) Name of the insecticide used	Carbofuran 3g and Cartap hydrochloride	Carbofuran 3g and Cartap hydrochloride
(iv) Quantity (kg/litre) used	10kg, 400 ml	12kg, 800 ml
(v) Frequency of application	2	3
(vi) Is this a major pest in the area?	-	-
(b) Diseases observed		Blast and Sheath blight
(i) Name of the disease		
(ii) Extent of damage (%)		Tricyclazole and Validamycin
(iii) Name of the pesticide used		120gm, 400 ml
(iv) Quantity (kg/litre) used		
(v) Frequency of application	2	2

Frontline Demonstration on Rice (2019-20)

(vi) Is this a major or common disease in the area.	-	-
(c) Biological control adopted, if any.	-	-

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	27-11-19	27-11-19
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	Crop Cutting	-
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	KVK Scientists	-
14. Estimate of yield (a) Grain (b) Straw	- 6.91 t/ha 7.2 t/ha	5.5 t/ha 5.9 t/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	1,46,492 29,000	1,27,050 25,000
16. Cost of cultivation (ha), Give some major items of expenditure.	57,500	69,670
Net profit to the farmer by adopting the technology (Rs/ha.)	69,550	
Farmers Reactions (In details)	Farmers are very much satisfied with this fine grain variety because of tolerance to Blight, less incidence of BPH and reduced cost of cultivation.	
Reaction of neighbouring farmers	Neighbouring farmers expressed that they will try to cultivate this variety next kharif season	
Number of visits made to the plot with dates and observations made in each trip.	One visit	

Assam

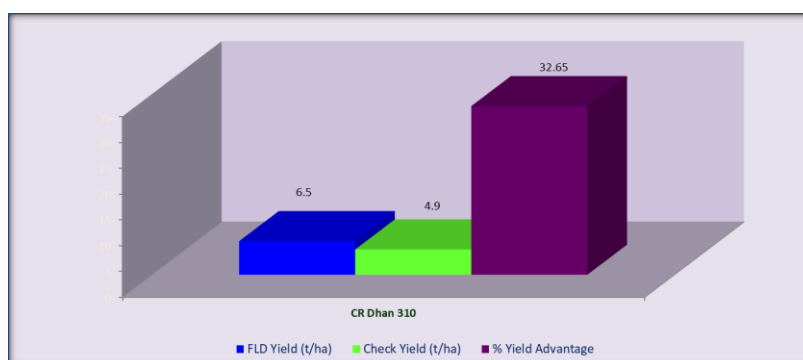
Rice (*Oryza sativa* L.) is the principal food crop of Assam occupying an area of about 24.51 lakh ha with an average productivity of 2107 kg/ha. Cultivation of HYV and hybrid rice is getting momentum in Assam in recent years. Ranjit is popular variety of rice in the Assam but it takes 140 to 145 days to mature. Most the farmers of the state prefer to cultivate local cultivars due to their taste in spite of their low productivity and they follow traditional cultivation practices.

Considering these facts, high yielding varieties CR Dhan 909 and CR Dhan 310 were demonstrated by ICAR-NRRI-RRLRRS, Gerua in 25 ha area following line transplanting in Bongalpara village, Hajo Block of Kamrup District. The FLDs allotted to RRLRRS, Gerua during Kharif 2019 was for 25 ha (10 ha for the rice variety CR Dhan 909 and 15 ha for the variety CR Dhan 310). For the effective demonstration of the technologies, it was decided to conduct the FLDs in two clusters of 10 ha and 15 ha each. Nearly 400 Kg breeder seed of CR Dhan 909 and 600 Kg breeder seed of CR Dhan 310 produced at the RRLRRS, Gerua, was supplied to the farmers of the respective clusters. Due to the devastating Assam Flood-2019 and the resultant water stagnation for more than three weeks, approximately 90% of the nursery was lost. The impact of flood was such that only 2 ha of area for CR Dhan 310 could be transplanted from the remaining seed nursery. Hence, the geotagging of 2 hectares of demonstration plot was uploaded in the app and the results of these 2 hectare demonstrations are provided.

The technology demonstrated, the rice variety CR Dhan 310, is the worlds first high protein rice variety, released from the ICAR-National Rice Research Institute, Cuttack, Odisha, and notified in 2016 [S.O. 1438(E), 19/04/2016]. In Assam, where rice is the major staple food crop and more than 90% of the population is dependent on it for their nutritional requirements, the variety CR Dhan 310 has the potential to combat protein malnutrition which is widespread in the population especially among children. Hence the FLDs conducted on this technology will help to spread it among the farmers of the state and is a step in the right direction towards ensuring nutritional security for the people of the state.

S No.	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1	CR Dhan 310	25*	Ranjit	Village: Bongalpara Block: Hajo District: Kamrup	6.5	4.9	32.65

*Due to floods only 2 hectares of FLDs were transplanted.



Bihar

In **Bihar**, rice is cultivated in an area of 32.23 lakh hectares with a productivity of 2.158 t/ha and the annual rice production is 72.01 lakh tons. There are three distinct rice-growing seasons, summer (garma) (March to early July), kharif (aus, autumn, and agahani) (May-June to October-December), and spring (boro) (October-November to May), in Bihar. Spring and summer rice are transplanted and grown under irrigated conditions. These rice crops are relatively productive though they occupy only 0.2 and 0.07 million ha, respectively. Majority of the rice area is cultivated in the kharif season on lands with varying toposequences—upland, medium land, lowland, and deepwater and flood-prone areas (dhab, diara, and tal land) by direct seeding or transplanting under rainfed as well as irrigated conditions.

The frontline Demonstration on rice variety CR Dhan 909 was conducted by ICAR-Research Complex for Eastern Region, Patna at 23 beneficiary farmers' field in 10 hectares of land in Buxar and Madhubani districts of Bihar under Frontline Demonstration programme funded by NFSM. Seed of rice variety CR Dhan 909, were provided to the demonstrating farmers. An average grain yield of 5.48 t/ha of CR Dhan 909 was obtained in FLD plots. In the Narendrapur panchayat in Madhubani districts where the area under FLD was 5 ha the average grain yield was 5.38 t/ha against the 3.5 t/ha grain yield from the traditional short grain aromatic variety Basmatiya. In Chausa block of Buxar district the average grain yield of CR Dhan 909 was 5.57 t/ha against the check variety Swarna (5.20 t/ha). Farmers were highly satisfied with the performance of CR Dhan 909. CR dhan 909 was free from false smut disease whereas the adjoining plots of popular variety Swarna was severely infected by false smut. Besides this, CR Dhan 909 was found to be 15 days earlier than Swarna. Being an aromatic rice, CR Dhan 909 has added advantage over Swarna. The farmers were impressed by the aroma coming from the standing crop and high tillering ability in the variety and high grain yield.



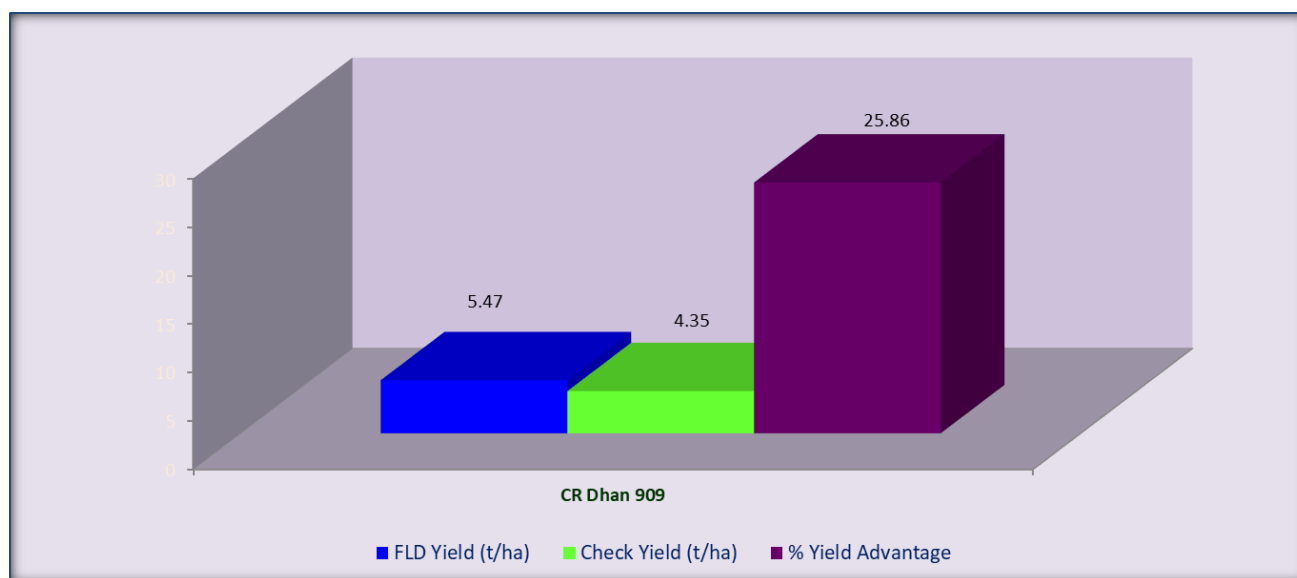
Field day on 16th November 2019 at Pawani village in Buxar district of Bihar



Field visit in demonstration plot of CR Dhan 909 at Pawani village in Buxar district



S No.	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1	CR Dhan 909	10	Basmatiya, Swarna	Madhubani and Buxar district	5.47	4.35	25.86

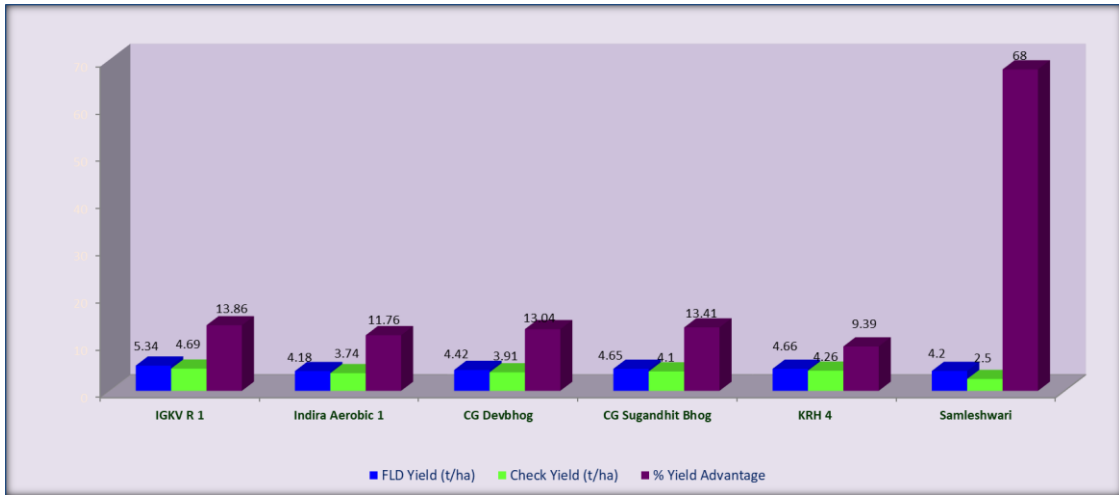


Chhattisgarh

In **Chhattisgarh** rice is cultivated in an area of 3.7 million hectares with a productivity of 1.322 t/ha. The state is known as rice bowl as it is rich in rice diversity including a number of landraces and traditional rice varieties.

Department of Genetics and Plant Breeding, IGKV Raipur conducted 30 FLDs to showcase the relative advantage of IGKV R 1, Indira Aerobic 1, Chhattisgarh Sugandhitbhog, Chhattisgarh Devbhog. In the demonstrated locations, introduced varieties recorded higher yield advantages compared to the local varieties grown. IGKV Raipur also successfully demonstrated 8 FLDs on KRH 4 with yield advantage of 9.39% over Indra Sona. S. G CARS, Jagdalpur conducted 5 FLDs on Samleshwari in 5 hectare area covering Tirathgarh and Bademarenga villages of Bastar district.

S No.	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	IGKV R 1	2	Local varieties	Block- Saja, Abhanpur	5.34	4.69	13.86
2.	Indira Aerobic 1	5	Local varieties	Block- Saja, Abhanpur, Arang	4.18	3.74	11.76
3.	CG Devbhog	21	Local varieties	Block- Saja, Abhanpur, Arang, Patan	4.42	3.91	13.04
4.	CG Sugandhit Bhog	2	Local varieties	Block- Patan	4.65	4.10	13.41
5.	KRH 4	8	Indra Sona	Khapri (Tk: Girhola, District: Durg) Teliyapuran (Tk: Semarsal, District: Mungel) Nawagarh (Tk: Nawagarh District: Bemetara)	4.66	4.26	9.39
6.	Samleshwari	5	Chudi Dhan	Villages- Tirathgarh and Bademarenga District- Bastar	4.2	2.5	68.00
7.	CGZR1, CGZR2, Zincorice	2			Results awaited		



KRH-4 demonstrations in Village- Khapri, Girhola, Durg

Annexure - V

1.	Crop	Rice
2.	Season	Kharif
3.	Technology being demonstrated	Improved Variety
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	Improved variety provided yield advantage over the existing farmers varieties
4.	Location (with full address)	Village: Tirathgarh and Bademarenga District: Bastar State: Chhattisgarh
5.	Category of beneficiary farmers: d. Name with Father's /Husband Name : e. Medium/Small/Marginal/Women : f. SC/ST/General	Kamal Singh Yadav/ Saamnath Yadav Virendra Nag/ Adgu Nag Marginal OBC and ST
6.	Area under demonstration (ha)	5 ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Rainfed
8.	Field Condition (d) Topography (e) Soil Type (f) Native nutrient status Any other information about field condition	Upland Light soil, sandy loam Poor nutrient status
9. Production Technology Adopted		Samleshwari variety of rice adopted by the farmers
Particulars	FLD Plot	Check – Farmers' practice Plot
(ii) Variety/Hybrid	Samleshwari,	Landraces (Lim Chudi, Sathka, Lalu dhan Lokti machhi, Safri
(ii) Seed rate	70 Kg/ha	80 Kg/ha
(iii) Source of Seed	Govt. agencies	Govt. agencies and other
(iv) Seed treatment	Yes	No
(v) Sowing date	1/07/2019	11/06/2019
(vi) Nursery details seeding density in nursery etc.		
(vii) Transplanting date		
(viii) Spacing	20 cm row spacing	Broadcasting
(ix) Plant population maintained per ha.	600000-700000 /ha	>700000 /ha
(x) FYM/compost applied	Not used	Not used
(xi) Fertilizers applied	80:60:40	No fertilizers applied

(c) Basal (NPK kgs/ha) (d) Top dressing : Number of times & stage (NPK kg/ha)	40:60:40 2 times top dressing, 1 st during active tillering, 2 nd during panicle initiation stage	
(xii) Micro-nutrient used if any (name/quantity)	Not used	Not used
(xiii) Weed control (a) Herbicides used (name/quantity) Inter-culture operations (Number)	PE Pyrazolsulfuron ethyl 10 % WP @ 200 g ha ⁻¹ at 3 DAT + hand weeding (HW) at 45 DAT.	Not used
(xiv) No. of irrigation given (crop stage-wise)	Rainfed	Rainfed

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(d) Insect pest	Stem borer, Gall midge	Stem borer, Gall midge
(i) Name of the pest observed	Leaf folder, BPH, Cut worm	Leaf folder, BPH, Cut worm
(ii) Extent of damage (%)	2%	Upto 30%
(iii) Name of the insecticide used	Chlorpyrifos 20 EC	-
(iv) Quantity (kg/litre) used	1 ml/ litre	-
(v) Frequency of application	10 days interval	-
(vi) Is this a major pest in the area?	Yes	Yes
(e) Diseases observed	Blast, Brown spot and	Blast, Brown spot and
(i) Name of the disease	False smut	False smut
(ii) Extent of damage (%)	5%	20%
(iii) Name of the pesticide used	Tricyclazole @ 300 g/ha	-
(iv) Quantity (kg/litre) used	300 g/ha	-
(v) Frequency of application	15 days interval	-
(vi) Is this a major or common disease in the area.	Yes	Yes
(f) Biological control adopted, if any.	-	-

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	28/10/19	15/10/19
12. Method adopted for	Harvesting, threshing and weighing	Harvesting, threshing and

Frontline Demonstration on Rice (2019-20)

estimate of yield (crop cutting, sampling method etc. Give details)		weighing
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	-	-
14. Estimate of yield (a) Grain (b) Straw	40 q/ha 8 q/ha	20 q/ha 5 q/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	Rs. 60000 /ha Rs. 10000/ ha	Rs. 30000 /ha Rs. 5000/ha
16. Cost of cultivation (ha), Give some major items of expenditure.	Sprayer Tools of interculture operations Insecticide Fungicide	Seed

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	Rs. 40000/ha
18.	Farmers Reactions (In details)	Farmers were benefitted by cultivating the improved variety.
19.	Reaction of neighbouring farmers	Neighbouring farmers found the variety profitable than the local varieties
20.	Number of visits made to the plot with dates and observations made in each trip.	01 (During flowering) 28/09/19

Gujarat



In the **Gujarat**, rice occupies about 5 % of the gross cropped area and it is being grown on about 7.5 to 8.0 lakh hectares, of which about 50-60 % is under a low land (Transplanted) and remaining 40-45 % under upland rice (drilled) situation. More than 90 % of the area under rice is confined to South and Middle Gujarat. The average productivity of low land (transplanted) rice is 2200 to 2300 kg/ha while of the upland (drilled) rice, it is merely 700 to 900 kg/ha. The overall low productivity is mainly due to the fact that about 40-45 per cent of the area under rice is upland with a productivity of 0.7 to 0.9 tonnes/ha.

Among the rice growing districts, productivity of six districts have higher than the national average productivity and eleven districts having productivity below the national average. There are six districts under medium productivity group, six districts under medium low productivity group and two districts under very low productivity group. About 52 per cent of area is concentrated in medium low productivity group which accounts for 41 per cent of total rice production.

Gujarat is having unique distinction of possessing longest coastline of 1600 km. Of which, South Gujarat constitute about 200 km of coastline, where paddy cultivation is in vogue. In general, the coastal soils are salt affected and are classified into Typic Halaquepts belonging to Dandi and Onjal I series. In South Gujarat alone, coastal and inland salt affected soils occupies about 70,000 ha area. Due to the concerted research efforts, Dandi variety was released during 2000 and was widely accepted by the farmers because of its salinity tolerance. However, the farmers are complaining about non-threshability of Dandi variety. The variety GNR-5 performed very well in whole Gujarat where it exhibited overall 13.1 % and 21.2 % grain yield superiority with easy threshability over the checks Dandi and NAUR-1, respectively. The variety GNR-5 performed very well in the coastal salt affected soils of South Gujarat and inland saline areas of middle Gujarat and released in the year 2015. The other popular fine grain varieties grown by Gujarat rice farmers are GR-4, GR-11 and GNR-2 which are most popular among the farmers and consumers due to their grain quality. But due to the susceptibility to major pests and diseases, productivity of these fine grain varieties was low. GNR-7 that was released during 2016 for transplanted areas of Gujarat has performed very well where it exhibited overall 13.0 %, 22.8% and 12.4 % grain yield superiority with easy threshability over the checks GNR-2, GR-11 and GAR-13, respectively.

S. No.	Technologies demonstrated	No. Of FLDs	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1	GNR-5	4	Jaya	Navsari	5.23	4.69	11.51
2	GNR-7	26	GR 11	Navsari	5.18	4.48	15.63
3	Mahisagar	10	Local Varieties	Kheda, Ahmedabad, Anand, Mahisagar, Dahod	4.90	4.43	10.61
4	GAR-14	10	Local Varieties	Kheda, Ahmedabad, Anand, Baroda, Gandhinagar, Sabarkantha	4.45	3.70	20.27

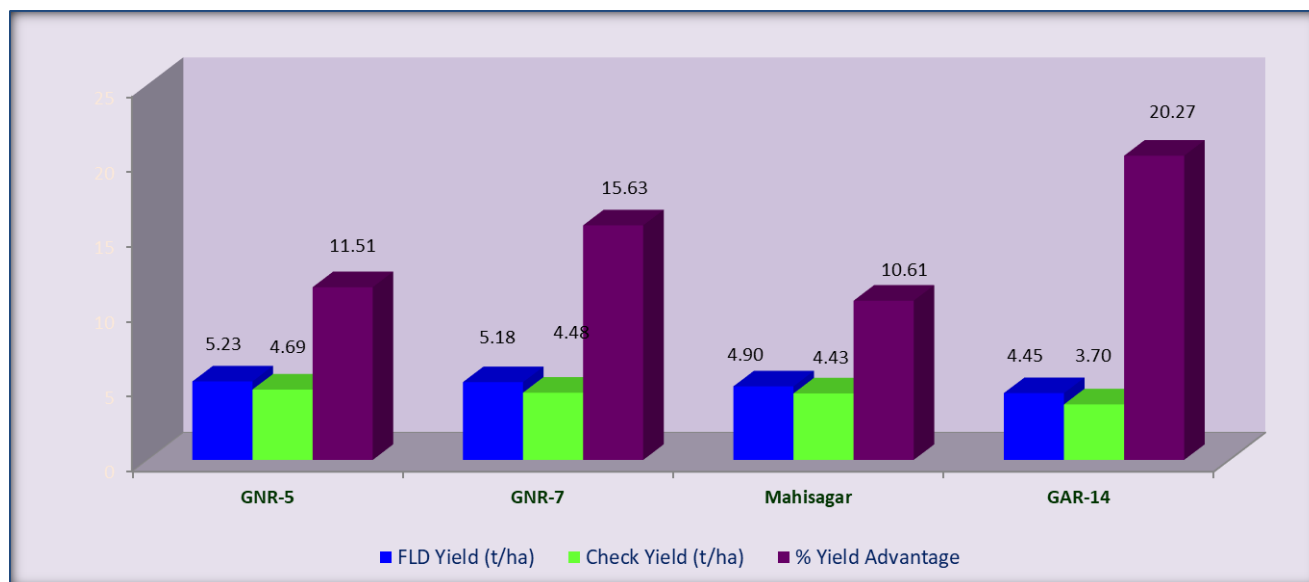
Salient Future of Variety:

<div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">GNR-5</div> 	Plant height (cm)	:	120-125 cm
	Maturity days (seed to seed)	:	125-130 days
	Grain type	:	Long slender
	Kernel length x Breadth (mm)	:	Length : 6.83 Breadth: 1.72 L/B ratio : 3.97
	Grain yield (kg/ha)	:	5500-6500
	Special features	:	Suitable for Irrigated transplanted normal and salt affected areas of Gujarat
<div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">GNR-7</div> 	Plant height (cm)	:	110 – 120
	Maturity days (seed to seed)	:	125-130
	Grain type	:	Short slender
	Kernel length x Breadth (mm)	:	Length : 5.45 Breadth: 1.75 L/B ratio : 3.11
	Grain yield (kg/ha)	:	5500-6000
	Special features	:	Suitable for Irrigated transplanted areas of Gujarat

Main Rice Research Centre, Soil & Water Management Research Unit, Navsari Agricultural University conducted 30 FLDs. Two important varieties viz., GNR 5 and GNR 7 were demonstrated in Front line demonstrations in kharif, 2019 in an area of 4.0 ha and 26 ha respectively. The rice varieties viz., GNR 5 and GNR 7 performed very well and it exhibited good yield advantage over respective checks. Farmers opined that GNR-5 was best suited for both irrigated transplanted normal and salt affected areas of Gujarat. GNR-5 is good in yield with good quality for beaten and puffed rice purpose. GNR-7 variety is good for cooking purpose and high head rice recovery.

Main Rice Research Station, A.A.U., Nawagam organized 10 FLDs each on Mahisagar and GAR 14 variety in Kheda, Ahmedabad, Anand, Mahisagar, Dahod, Baroda, Gandhinagar, Sabarkantha districts of Gujarat. Mahisagar has performed well against local varieties in all demonstrated locations with 10.61% yield advantage. GAR 14 variety has outperformed the local varieties with 20% advantage in its yield.

Frontline Demonstration on Rice (2019-20)



Rice Variety GNR-5 at Bahadurbhai Koldhubhai Chaudhari Village: Kamaljari, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-5 at Bajanbhai Kavadhubhai Cahudhari Village: Kamaljari, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-5 at Dipaben Jitendrabhai Bhoya Village: Anklach, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-5 at Sangitaben Bhagubhai Gaviti Village: Anklach, Tehsil: Vandsa, Dist. Navsari, Gujarat

Frontline Demonstration on Rice (2019-20)



Rice Variety GNR-7 at Dayjubhai Manshubhai Chauvadhari Village: Chondha, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-7 at Kolubhai Navsubhai Gavit Village: Bedmal, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-7 at Natubhai Somabhai Vagmare Village: Anklachh, Tehsil: Vandsa, Dist. Navsari, Gujarat



Rice Variety GNR-7 at Rajubhai Nagjibhai Jadav Village: Anklachh, Tehsil: Vandsa, Dist. Navsari, Gujarat

Frontline Demonstration on Rice (2019-20)

Frontline Demonstration (Mahisagar variety) Conducted by MRRS, AAU, Nawagam during Kharif-2019

Sr. No.	Name of Farmer	Village	Taluka	District	Area (ha.)	Date of Sowing	Date of T.P	Yield (Kg/ha.)	
								Mahisagar	Check
1	Patel Nayan Vasantbhai	Vaso	Vaso	Kheda	0.50	05-06-19	11-07-19	5600	4880
2	BhoiAjaybhai Rameshbhai	Vatadi	Kheda	Kheda	0.50	15-06-19	20-07-19	5360	4960
3	Chauhan Gabharubhai J.	Nawagam	Kheda	Kheda	0.50	16-06-19	10-07-19	5200	4800
4	RavalUdesingh Nathubha	Bherai	Kheda	Kheda	0.50	11-06-19	16-07-19	6000	5280
5	Parmar Rakeshbhai Ambalalbhai	Damri	Kheda	Kheda	0.50	11-6-19	17-7-19	5040	4400
6	Dabhi Vikrambhai Jeshingbhai	Makva	Mehmdabad	Kheda	0.50	7-06-19	12-7-19	5120	4480
7	Patel Jayantibhai Lalajibhai	Bidaj	Kheda	Kheda	0.50	7-06-19	11-7-19	5440	4880
8	Mahida Dharmendrabhai	Kheda	Kheda	Kheda	0.50	17-6-19	21-07-19	4640	4240
9	Patel Ratilabhai Somabhai	Kapadvanj	Kapadvanj	Kheda	0.50	06-6-19	10-7-19	4160	3920
10	GohilAmbalalbhai Ashabhai	Kathana	Kheda	Kheda	0.50	16-06-19	21-7-19	5840	5360
11	GohelPoonmbhai Ravjibhai	Deva	Sojitra	Anand	0.50	12-06-19	08-07-19	4640	4160
12	Patel Hashmukhbhai Ravjibhai	Chikhodara	Anand	Anand	0.50	12-06-19	10-07-19	4720	4480
13	Pathak R. Rajeshchandra	Dholi	Dholka	Ahmedabad	0.50	14-06-19	19-07-19	4400	4000
14	Prajapati Rameshbhai Manibhai	Bareja	Daskroi	Ahmedabad	0.50	7-06-19	15-07-19	5120	4560
15	Sisodiya Jagdishsih Bhurubha	Chandisar	Dholka	Ahmedabad	0.50	12-06-19	17-07-19	4480	4000
16	Patel Jyotindrabhai N.	Jesangpur	Lunavada	Mahisagar	0.50	23-06-19	17-07-19	4160	3840
17	Machhar Valsingbhai Badevabhai	Kadiya	Fatehpur	Dahod	0.50	25-06-19	23-07-19	4000	3680
18	Sisodiya Jagdishsih Bhurubha	Chandisar	Dholka	Ahmedabad	0.50	12-06-19	17-07-19	5200	4480
19	Patel Kiranbhai D	Modasar	Sanand	Ahmedabad	0.50	9-06-19	13-07-19	4400	4080
20	Patel Vadilal Kasirambhai	Zolapur	Sanand	Ahmedabad	0.50	22-06-19	24-07-19	4480	4160

Frontline Demonstration on Rice (2019-20)

Frontline Demonstration (Variety : GAR-14) Conducted by MRRS, AAU, Nawagam during Kharif-2019

Sr. No.	Name of Farmer	Village	Taluka	District	Area (ha.)	Date of Sowing	Date of T.P	Yield (Kg/ha.)	
								GAR-14	Local Check
1	Patel Akshay Pravinbhai	Bareja	Daskroi	A'bad	0.25	14-06-19	10-07-19	4167	3750
2	Patel Hirenbhai Pravinbhai	Bareja	Daskroi	A'bad	0.25	18-06-19	20-07-19	5000	4250
3	Ghanchi Ibrahim Gulabnabi	Dholka	Dholka	A'bad	0.25	12-06-19	10-07-19	5083	4333
4	Thakor Chandubhai Suratbhai	Mahijda	Daskroi	A'bad	0.25	19-06-19	15-07-19	4167	3500
5	Patel Harekrushna Mahendrabhai	Sandhana	Matar	Kheda	0.25	18-06-19	15-07-19	3750	3333
6	Chauhan Chimanbhai Mangalbhai	Bavara	Mahemd avad	Kheda	0.25	16-06-19	14-07-19	4000	3583
7	Vankar Hiteshkumar Ramanbhai	Palana	Vaso	Kheda	0.25	17-06-19	13-07-19	4167	3750
8	Patel Girishbhai Shankarbhai	Jetalpur	Daskroi	A'bad	0.25	20-06-19	18-07-19	5000	4000
9	Sisodiya Champaksinh Hardevsinh	Radhu	Kheda	Kheda	0.25	12-06-19	10-07-19	4667	4083
10	Chavda Ravjibhai Mohanbhai	Chitrasar	Kheda	Kheda	0.25	22-06-19	18-07-19	4333	3500
11	Vaghela Chetanbhai Kanubhai	Sathal	Dholka	A'bad	0.25	28-06-19	29-07-19	4417	4083
12	Patel Harshadbhai Ramjibhai	Netrmani	Idar	Sabark antha	0.25	16-06-19	20-07-19	5167	4167
13	Thakor Fulabhi Saburjibhai	Khicha	Sanands	A'bad	0.25	21-06-19	22-07-19	4583	3583
14	Thakor Manishih Bhulabhai	Badodra	Dashkroi	A'bad	0.25	17-06-19	20-07-19	3750	3333
15	Baraiya Hashmukhbhai Ramabhai	Sarasvani	Mhemda bad	Kheda	0.25	10-06-19	14-07-19	3833	3500
16	Patel Bhikhabhai Mohanbhai	Shreejipur a	Kheda	Kheda	0.25	9-06-19	13-07-19	5000	4250
17	Patel Arvindbhai Isverbhai	Shreejipur a	Kheda	Kheda	0.25	07-06-19	11-07-19	5833	4167
18	Parmar Kabhaibhai Chaganbhai	Palaj	Anand	Anand	0.25	2-06-19	6-07-19	4917	3917
19	Parmar Udesinh Maganbhai	Chikodra	Anand	Anand	0.25	17-06-19	20-07-19	5000	4167
20	Parmar Rameshbhai Maganbhai	Chikodra	Anand	Anand	0.25	13-06-19	17-07-19	5667	4333
21	Parmar Ramabhai Chhanarbhai	Jol	Anand	Anand	0.25	08-06-19	11-07-19	4750	3750
22	Bharvad Laljibhai Katubhai	Mahijda	Dashkroi	A'bad	0.25	07-06-19	11-07-19	3083	3750
23	Dodiya Ajitbhai Gabhrubhai	Mahijda	Dashkroi	A'bad	0.25	02-6-19	04-07-19	4750	3417
24	Patel Maheshbhai Prabhudas	Dabhoi	Dabhoi	Baroda	0.25	07-06-19	11-07-19	4167	4000
25	Panchal Parthikkumar Maheshbhai	Vatvana	Dabhoi	Baroda	0.25	11-06-19	16-07-19	4750	3500
26	Bhoi Mukeshbhai kabhaibhai	Chhora	Umreth	Anand	0.25	03-06-19	12-07-19	4167	1167
27	Bhoi Jayeshbhai Kantibhai	Adas	Anand	Anand	0.25	8-06-19	19-07-19	5000	3583
28	Patel Lataben Kaushikbhai	Vatvana	Dabhoi	Baroda	0.25	11-06-19	16-07-19	3750	3333

Frontline Demonstration on Rice (2019-20)

29	Patel Premkumar Kaushikbhai	Vatvana	Dabhoi	Baroda	0.25	17-06-19	20-07-19	3833	3167
30	Alak Shah	Santej	Kalol	Gandhi nagar	0.25	10-06-19	13-07-19	3500	3667
31	Prajapati Mehul K.	Vihal	G.nagar	Gandhi nagar	0.25	09-06-19	11-07-19	3750	3250
32	Parmar Jitendra Jesangbhai	Vasnabhia rg	Kheda	Kheda	0.25	10-06-19	13-07-19	5000	3750
33	Malel Sirajmiya Sayadmiya	Vasnabhia rg	Kheda	Kheda	0.25	08-06-19	16-07-19	5167	3750
34	Patel Bharatbhai Jasabhai	Peej	Vaso	Kheda	0.25	13-06-19	17-07-19	2917	3667
35	Ramanbhai Tarasihai Patel	Randhvan aj	Matar	Kheda	0.25	17-06-19	21-07-19	4167	3917
36	Rajendrabhai Ramanbhai Patel	Randhvan aj	Matar	Kheda	0.25	14-06-19	17-07-19	3250	3917
37	Kamleshbhai Ramanbhai Patel	Randhvan aj	Matar	Kheda	0.25	19-06-19	27-07-19	4000	3417
38	Chauhan Kanubhai Ukabhai	Vasnakhur d	Kheda	Kheda	0.25	12-06-19	16-07-19	5417	4000
39	Thakor Khodaji Kantiji	Bhatt	Kheda	Kheda	0.25	11-06-19	17-07-19	5000	3667
40	Chavda Merubhai Agarsihbhai	Bherai	Kheda	Kheda	0.25	08-06-19	14-07-19	5083	3917

Himachal Pradesh

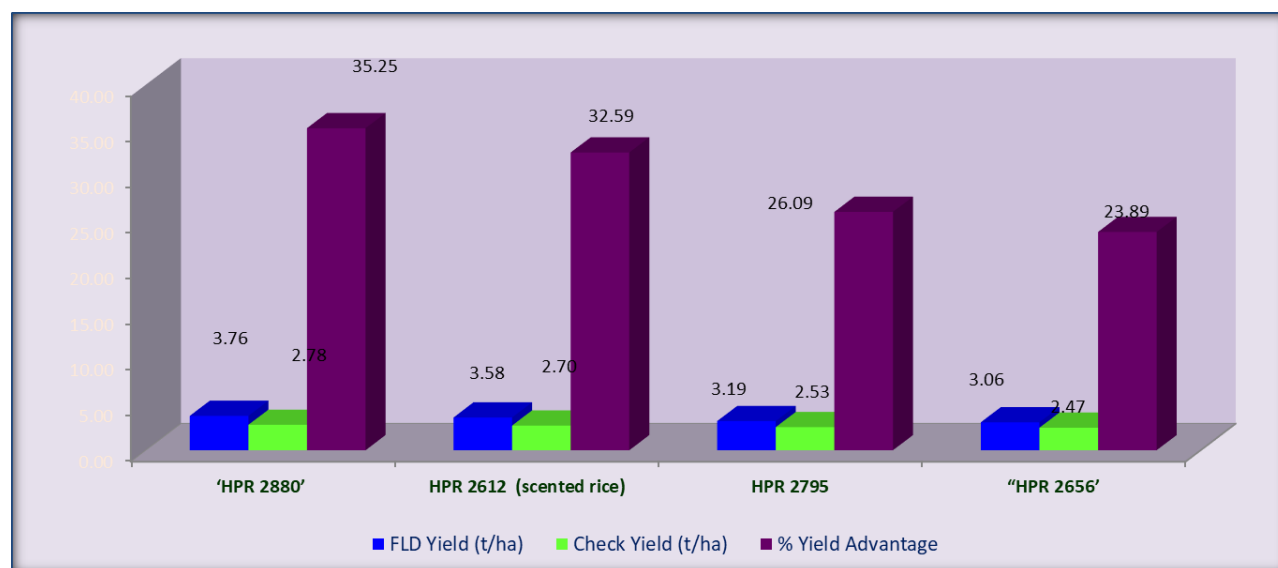
In **Himachal Pradesh** rice is cultivated in area of 0.72 lakh hectares with a productivity of 1.614 t/ha and annual rice production of 1.17 lakh tons. Rice is cultivated in ten of the twelve districts of the State except Kinnaur and Lahaul- Spiti. Kangra & Mandi districts account for more than two third of rice acreage and production in the state. There is great diversity under which rice is cultivated ranging from foot-hills (350 m) to high hills (upto 2000 m). Rice is cultivated by four different methods i. e. dry seeding (rainfed upland), *wattar* sowing (sowing with the receipt of pre monsoon rainfall and interculture (wet tillage) at the onset of monsoon rains at about one month after sowing), wet seeding (sowing pre sprouted seeds in puddled field) and transplanted methods. Different rice varieties have been recommended for rainfed and irrigated ecologies. In mid hill conditions, low temperature in the month of September limits the crop duration. The state on an average receives 1251 mm rainfall of which two third occurs from June to September. Delay in the onset of monsoon may delay the rice sowing/transplanting. Only one crop of rice is grown in the state during wet season from May to October. The direct seeding and nursery sowing starts by the end of May and continues up to about 15th June. However, in Kullu valley and other higher hills of Shimla, Mandi and Chamba districts of the state, the nursery sowing starts as early as mid-April. The transplanting starts around 20th June depending on the onset of monsoon and availability of irrigation water in the area and continues up to mid of July.

Rice and Wheat Research Centre, Malan of CSK Himachal Pradesh Krishi Vishwavidyalaya conducted 5 FLDs on four rice varieties HPR 2880, HPR 2612, HPR 2656 (rice for upland conditions), HPR 2795 (red rice for upland conditions) with complete package of practice, in three clusters of Rait, Nagrota Bhagwan & Baijnath blocks of Kangra district which is in the notified list of NFSM districts (National Food Security Mission). The demonstrations were conducted on fourteen farmers' fields as the land holding is less. Four varieties for rainfed and irrigated ecologies with complete package of practice were demonstrated. HPR 2880 is a high yielding blast resistant variety recommended for cultivation in low and mid hills. HPR 2612 is a high yielding scented rice for irrigated ecology in area with 650 to 1500 m altitude. HPR 2795 (red rice variety) and HPR 2656 have been recommended for upland rainfed ecologies of low & mid hills of the state. Red rice has more of iron and zinc content and has medicinal properties. Red rice fetches more prices in the market.

The varieties demonstrated, performed well and farmers were satisfied with the productivity and profitability. The yield advantage over the checks varied from 23.8 to 35.4 per cent. HPR 2880 recorded seed advantage of 35.44 per cent and advantage in straw was 33.29 per cent. The farmers were happy with the yield advantage. However, this variety showed lodging in Rait block and farmers' feedback was to reduce its height. Scented rice variety HPR 2612 recorded seed and straw advantage by 32.6 and 33.76 per cent respectively and farmers showed interest to increase the acreage under this variety as it has more taste. The upland red rice variety HPR 2795 recorded grain yield advantage 25.97 per cent and farmers were happy to accept and increase area under this variety as it is more nutritive and fetches higher price. HPR 2656 provided grain yield advantage by 23.8 per cent under rainfed conditions. Hence, these new varieties will play a pivotal role in the state to increase the rice grain production in the state *vis a vis* to double the farmers' income by 2022.

Frontline Demonstration on Rice (2019-20)

S No.	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	'HPR 2880' with complete POP	5.17	HPR 2143 and local	Rait, Nagrota Bhagwan, and Baijnath blocks of Kangra district	3.76	2.78	35.25
2.	HPR 2612 (scented rice) with complete POP	1.0	RP 2421	Baijnath & Nagrota blocks of Kangra district	3.58	2.70	32.59
3.	HPR 2795 with complete POP	0.83	Local practices	Rait block of Kangra district	3.19	2.53	26.09
4.	"HPR 2656" upland rice variety with complete POP	1.0	Local practices	Rait block of Kangra district	3.06	2.47	23.89



Frontline Demonstration on Rice (2019-20)



Jammu and Kashmir

In **Jammu & Kashmir** rice is cultivated in an area of 2.62 lakh ha with a productivity of 2.078 t/ha the annual rice production is 5.45 lakh tons. The state is rich in rice culture from the ancient times and a number of landraces and traditional rice varieties grown earlier have been phased out by the cultivation of high yielding varieties.

In Kashmir, 35 FLDs were organized by Sher-e-Kashmir University of Agricultural Science and Technology of Kashmir. Under the programme 50 villages were covered across nine Districts (Anantnag; Kulgam; Pulwama; Budgam;; Ganderbal; Kupwara Srinagar and Baramulla) of the valley through active involvement of KVKs of concerned districts. Two newly released high yielding varieties namely Shalimar Rice 4 and Shalimar Rice 5 were demonstrated along with recommended package of practices. Shalimar Rice 4 was demonstrated in plains of the Valley covering altitude of 1550-1700 m amsl, while as Shalimar Rice 5 was demonstrated under higher altitude of Valley covering an altitude of 2000 - 2200 m amsl.

The demonstrations showed the yield advantage of 20-35% as compared to the prevailing varieties. Moreover, farmers were satisfied with higher net monetary gain of 29 % (plains of Valley) and 23 % (higher altitudes of Valley) over prevailing varieties. Farmers are eager to adopt the same varieties along with recommended package of practices. Further farmer to farmer seed exchange were reported at some places during harvesting time.

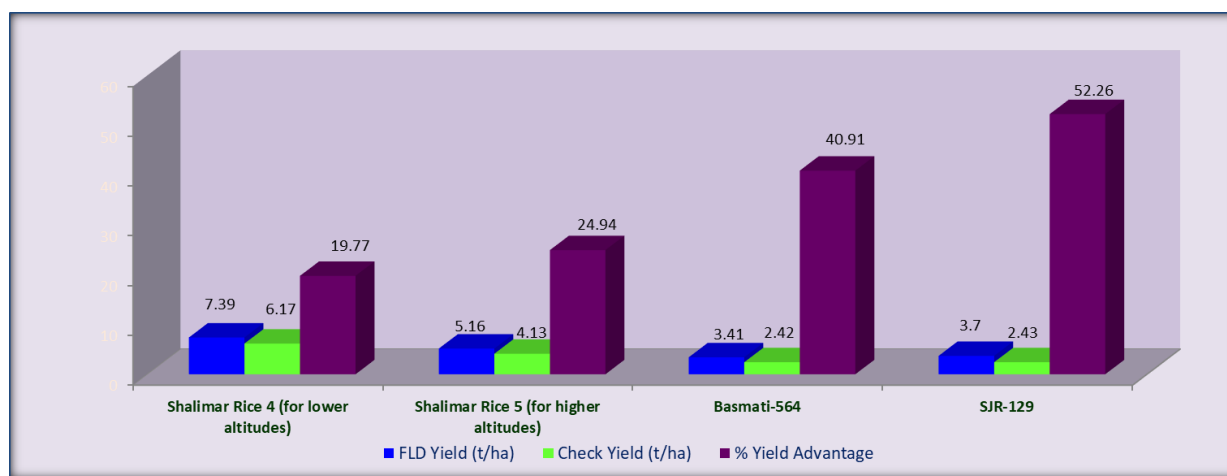
Package of practices followed

- The farmers were advised to transplant young seedlings of 25 days old in plains and for higher altitudes seedling age of only 30 days with only 2-3 seedlings per hill.
- The farmers were strictly advised to adhere recommended schedule of fertilizers i.e., 120:60:30:10 (plains of valley) and 80:45:30:10 (higher altitudes) kg/ha of N; P; K; Zn. Urea, DAP, MOP and Zinc Sulphate were used as source of N, P, K and Zn, respectively.
- Nitrogen was applied in three splits basal, tillering and panicle initiation, besides basal dose of FYM @ 10 t/ha before 15-20 days of transplanting (i.e., at the time of land preparation).
- Eros (Pyrazosulfuron+pretilachlor) a newly tested and recommended herbicide which controls grasses, sedges and suppresses one noxious weeds such as *Echinochloa crusgali* L., *Echinochloa colona* L., *Cyperus iria* L., *Cyperus difformis* L., *Marsilia quadrifolia* L. *Potamogeton distinctus*., A. Benn., *Ammania baccifera* L. and *Monochoria vaginalis* and *Potamogeton distinctus* locally called “Awe” are the common weeds associated with rice in the valley.
- Farmers were imparted training on water management and how to use the irrigation water judiciously.
- Three teams each comprised of three members lead by a Scientist from Khudwani centre were constituted, who visited all locations and monitored the demonstrations at three stages (transplanting, flowering and harvesting) to record plant population, disease and pest incidence and finally grain and straw yield at harvest.

Basmati rice is the major crop of irrigated sub-tropical plains of Jammu, Samba and Kathua Districts grown in an area of > 60,000 ha area out of which an area of > 22000 ha has suffered a major loss at maturity due to unprecedented rains and inclement weather. Moreover, lodging, water stagnation in standing crop, frequent wetting of harvested crop, cloudy weather and high humidity and grain discolouration are the cause of very low yield.

Chatha College, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu conducted varietal demonstrations on Basmati 564 and SJR-129, which were the short and medium duration varieties both the varieties have potential for high yield. Beside yield, timely harvesting will also help for timely sown of wheat crop / rabi crops and ultimately increase the cropping intensity which is the result of more income of farmers.

S. No.	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Shalimar Rice 4 (for lower altitudes)	31.4	Jehlum, SR1, SR2, SR3	Anatnag, Kupeara, Ganderbal	7.39	6.17	19.77
2.	Shalimar Rice 5 (for higher altitudes)	3.6	K332	Anatnag	5.16	4.13	24.94
3.	Basmati-564	14	Basmati - 370	Taluka: R.S. Pura, District: Jammu	3.41	2.42	40.91
4.	SJR-129	6	Basmati - 370	Taluka: R.S. Pura District: Jammu	3.70	2.43	52.26



**ANNEXURE - V
FINAL REPORT ON FRONTLINE DEMONSTRATION**

1.	Crop	Rice
2.	Season	<i>Kharif</i>
3.	Technology being demonstrated	Varietal improvement
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	1. Basmati-564 High yield and medium duration
	Location (with full address)	Village : Kotli Meerdiya, R.S. Pura Taluka: R.S. Pura District: Jammu State: Jammu and Kashmir
5.	Category of beneficiary farmers:	Janak Raj
	g. Name with Father's /Husband Name :	
	h. Medium/Small/Marginal/Women :	Marginal
	i. SC/ST/General	Gen
6.	Area under demonstration (ha)	0.6 ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Irrigated
8.	Field Condition (g) Topography (h) Soil Type (i) Native nutrient status Any other information about field condition	Irrigated plain
9. Production Technology Adopted		Improved Varieties
Particulars	FLD Plot	Check – Farmers' practice Plot
(iii) Variety/Hybrid	Basmati- 564	Basmati -370
(ii) Seed rate	20 kg / ha	20 kg / ha
(iii) Source of Seed	Div. of PBG, SKUAST- Jammu	Div. of PBG, SKUAST- Jammu
(iv) Seed treatment	NA	NA
(v) Sowing date	10 th June 2019	17 th June 2019
(vi) Nursery details seeding density in nursery etc.	Line sowing, 20 cm distance	Broadcasting
(vii) Transplanting date	15 th July 2019	19 th July 2019
(viii) Spacing	10 X 20 cm	Without any proper spacing
(ix) Plant population	5,00,000 (Approx.)	4,00,000 (Approx.)

Frontline Demonstration on Rice (2019-20)

maintained per ha.		
(x) FYM/compost applied	FYM	
(xi) Fertilizers applied (e) Basal (NPK kgs/ha) (f) Top dressing : Number of times & stage (NPK kg/ha)	20 : 30:10 (NPK/ha) 10 : 0 : 0 10 : 0 : 0 Not provided by Implementing agency	0: 40:0 (NPK / Ha) 20 :0:0 20:0 : 0 Not provided by Implementing agency
(xii) Micro-nutrient used if any (name/quantity)	NA	
(xiii) Weed control (b) Herbicides used (name/quantity) Inter-culture operations (Number)	Nominee Gold 10 ml / 500 M ²	Nominee Gold 10 ml / 500 M ²
(xiv) No. of irrigation given (crop stage-wise)		

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(g) Insect pest	Not infected significantly	Not infected significantly
(i) Name of the pest observed		
(ii) Extent of damage (%)		
(iii) Name of the insecticide used		
(iv) Quantity (kg/litre) used		
(v) Frequency of application		
(vi) Is this a major pest in the area?		
(h) Diseases observed		Grain discolouration,
(i) Name of the disease		
(ii) Extent of damage (%)		More than 50 %
(iii) Name of the pesticide used		
(iv) Quantity (kg/litre) used		
(v) Frequency of application		
(vi) Is this a major or common disease in the area.	No	No
(i) Biological control adopted, if any.		

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	5 th Nov 2019	4 th Dec. 2019
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	Crop cutting	Crop cutting

13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	Devendra Kumar JRF, DBT-Project	
14. Estimate of yield (a) Grain (b) Straw		
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)		
16. Cost of cultivation (ha), Give some major items of expenditure.		

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	
18.	Farmers Reactions (In details)	They happy with high yield and less damage due to high rain fall at flowering stage which was the cause of damage of check variety
19.	Reaction of neighbouring farmers	They also showed interest to grow this variety
20.	Number of visits made to the plot with dates and observations made in each trip.	Nursery sowing, at transplanting, flowering and at harvesting time



Jharkhand

Jharkhand has been divided into 3 Agro-climatic sub zones viz., Central and north eastern plateau sub zone (zone IV), Western plateau sub zone (zone V) and Southeastern plateau sub zone (zone VI). More than 50% of total area under rice in the State is concentrated in very low productivity group. High and medium productivity groups do not exist in the State. Average productivity of the State is 1,021 kg/ha which is very much below the national average. There is a need for popularizing new varieties and technologies for wider acceptability among the farmers and large scale adoption for enhancing the productivity and production in the state. One method of achieving this is by organizing series of demonstrations on latest technologies. Realizing this fact, every year, FLDs are being organized on a cafeteria of new technologies in the state. This year, 85 FLDs were planned and conducted in the state.

Central Rainfed Upland Rice Research Station (CRURRS - NRII), Hazaribagh conducted 30 FLDs on drought tolerant rice varieties Sahbhagi Dhan, IR 64 Drt 1 and Abhisekh under DSR in 30 ha of lands involving 140 beneficiaries in total of 8 villages in 8 Blocks, which covers 4 districts (Ramgarh, Hazaribagh, Chatra and Koderma). Under FLD programme, training and awareness programme were also organized in those villages to provide the knowledge related to DSR and advantages of these varieties. Crop cutting trials were conducted to compare the yield of demonstrated varieties and local check varieties to find out the relative advantages. It was observed that, Sahbhagi Dhan, IR 64 Drt.1 and Abhisekh recorded average yield advantages of 30% (4.2 t/ha), 25% (5.0 t/ha) and 32% (5.2 t/ha) respectively over local checks.

ICAR-IIAB, Ranchi conducted FLDs to demonstrate the potential of drought-tolerant rice variety DRR-Dhan-42 (35 FLDs) and protein rich biofortified variety CR-Dhan-310 (05 FLDs) in 40 hectares of rainfed upland area of 56 farmers from 10 villages of five districts of Jharkhand namely Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi. Front Line Demonstrations organized during the year have been effective in creating awareness about the potential of drought-tolerant rice variety DRR-Dhan 42 under drought conditions and the significance of protein-rich rice varieties in ameliorating protein-energy malnutrition in women and children. Although some of the tribal farmers seemed to be skeptical about these varieties initially, a series of farmer- scientist interaction meetings, training, field days, etc. lead to increased acceptance and interest in the varieties among the farmers. The technologies demonstrated through FLDs recorded the average yield advantage of 11.6% over the farmers' practice. The FLD program by ICAR-IIAB has been successful in convincing the farmers about the effectiveness of scientific crop management practices. The results of FLDs revealed that there is tremendous scope to bridge the yield gaps in rainfed uplands of Jharkhand by large scale adoption of drought-tolerant high yielding rice varieties.

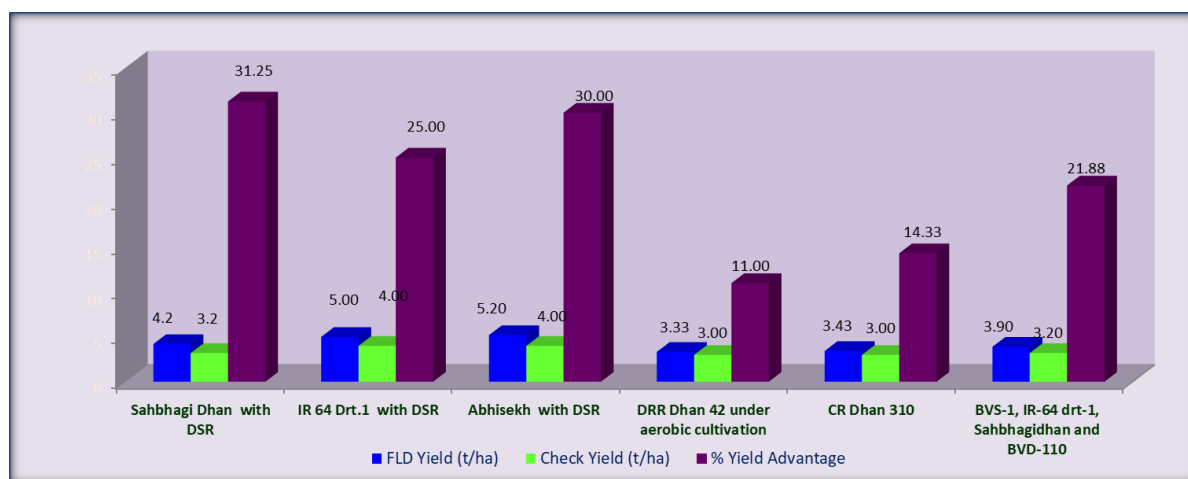
Department of Plant Breeding & Genetics, Kanke, Ranchi demonstrated on technologies under DSR like BVS-1, IR-64 drt-1, Sahbhagidhan and BVD-110 in the farmers' field of Kanjgi village in Chanho Block of Ranchi district. The demonstrated varieties BVS-1, IR-64 drt-1, Sahbhagidhan and BVD-110 under DSR gave better yield than farmers practice in which they used local varieties under DSR.

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Drought tolerant variety - Sahbhagi Dhan with DSR	30	Lalat	Ramgarh, Hazaribagh, Chatra and Koderma	4.2	3.2	31.25
2.	Drought tolerant variety - IR 64 Drt.1 with DSR		Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.0	4.0	25.00
3.	Drought tolerant variety - Abhisekh with DSR		Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.2	4.0	30.00
4.	DRR Dhan 42 under aerobic cultivation	35	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.33	3.0	11.00
5.	CR Dhan 310	5	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.43	3.0	14.33
6.	BVS-1, IR-64 drt-1, Sahbhagidhan and BVD-110	15	Local var.	Vill. Kanjgi Block: Chanho Dist. Ranchi	3.9	3.2	21.88



Frontline Demonstration on Rice (2019-20)



ANNEXURE –V

ASSESSMENT OF TECHNOLOGY ADOPTION AND GAP

Items	Farmer's practice (Check plot)	Recommended Practice (FLD plot)
Source of seed Govt. agencies/public undertaking/others	Block Office, Local Dealers	KVK, Hazaribagh
Name of varieties cultivated	Lalat, IR-64, IR-36	DRR Dhan 42, CR Dhan 310
Other varieties most commonly adopted by the farmers	-	-
Name of hybrid rice if grown on the farm	-	-
Seed rate (kg/ha)	65 kg/ha	45 kg/ha
Seed treatment with water (Yes/No)	Yes	Yes
Age of seedlings transplanted in the field	30-35	25-30
Seed treatment with fungicides/others, dose of fungicides/others	No	Yes (Thiram @ 3g/kg seed)
Raising of nursery in case of rice by dry or wet method and raised bed or flatbed	Wet	Wet
Quantity and type of NPK fertilizers and manures used	Urea	Urea: SSP: MOP

Frontline Demonstration on Rice (2019-20)

in nursery of rice?		
Name and quantity of plant protection measures used in rice nursery	No record	No incidence of disease
Method of transplanting of rice	Manual	Manual, Line sowing
No. of hills per unit area in case of rice	Not fixed	33 hill/m ²
No. of plants per hill in case of rice	Not fixed	Two seedlings/hill
Spacing of row to row and plant to plant	Not fixed	20 cm x 15 cm
Method of field preparation for transplanting: use of rotavator/other machinery	Manual using desi plough	Manual using desi plough
Use of gypsum/Lime: Quantity (kg/ha)	-	-
Doses of NPK fertilizers applied	100:60:0	80:60:40
Name and quantity of use of bio-fertilizers	-	-
Quantity of vermicompost applied	-	-
Number of doses of N applied: single/double/others	2 times	3 times (Basal, Tillering, Flowering)
Name and quantity of micro-nutrients applied in field	-	-
Type of irrigation: flood/micro irrigation	Rainfed	Rainfed
Number of irrigation applied in the field	-	-
Method of weeding:mechanical/chemical/manual/others	Manual	Manual
Weeding of crop: hand weeder/rotary weeder/conoweeder/powered weeder	-	-
Name and quantity of herbicides applied	-	-
Name of common insects	Stem borer, BPH	Stem borer, BPH
Name of common diseases	Blast & Brown spot	Showed tolerance to blast
Name and quantity of pesticides for the control of pests	NA	NA
Number of sprays of insecticides	NA	NA
Name and quantity of insecticides	NA	NA
Number of sprays of insecticides	NA	NA
Biological control of insects-pests and diseases	NA	NA
Harvesting of crop: manual/mechanical/others	Manual	Manual
Name of machine used for harvesting	-	-
Threshing of crop: manual/mechanical/others	Manual	Manual
Name of machine used for threshing	-	-

Karnataka

In **Karnataka** rice is grown under a variety of soils and wide range of rainfall and temperature. Only around 44 per cent of the total acreage is under irrigation while the rest is under the regime of monsoon. Rice is cultivated in places where the rains are as heavy as 3000 mm and in others where it is just 600 mm. In some areas only one crop is grown and in certain other areas three crops are raised. In Karnataka rice is cultivated in an area of 14.16 lakh ha with a productivity of 2.897 t/ha the annual rice production is 40.38 lakh tons. The unique feature of rice culture in the state is that either sowing or transplanting is seen in all seasons of the year. The duration of the rice varieties cultivated in the state varies from 100 to 180 days depending on season and agro-climatic location.

Zonal Agricultural Research Station (UAS, Bengaluru) organized 10 FLDs on KMP – 175 (Daksha) under Aerobic Method (High water use efficient, released for aerobic cultivation in Zone 6 of Karnataka), on Alternated wetting and drying with high yielding varieties. KMP 175 is having advantage of more WUE, short duration variety that matures in 115-120 days and developed for aerobic method of cultivation. Its grains are medium bold and husk is brown and has yield potential of 4.5- 5.0 t/ha under aerobic condition. In the demonstration locations in Mandya and Mysore districts, KMP – 175 recorded higher yield of 5.0 t/ha with 25% yield advantage over the Rasi variety.

The frontline demonstration on 'Alternate wetting and drying (AWD) irrigation' up to panicle initiation in transplanted rice was taken in 12 ha area in twenty-four farmers field in comparison to their traditional irrigation method such as allowing continuous standing water of 3 to 5 cm depth in transplanted rice field. The demonstration was undertaken in 11 villages of Mandya and Tumkur districts. The main objective of demonstration was to increase on farm water use efficiency in transplanted rice by adopting irrigation application method to match evapo- transpiration demand of the crop with reduced percolation losses of water in paddy field. The different paddy varieties used for planting by the farmers in demonstration were MTU 1001, BR 2655, Gangavathi sona, KRH-2 and VNR hybrid. The source of irrigation water was canal from Krisnarajasagara dam of Cauvery river basin. The transplanted paddy with allowing 3 to 5 cm standing water in the field was the common method of farmer's cultivation. The demonstration results revealed that, adoption of alternate wetting and drying method of irrigation (irrigating the field at 3 days after disappearance of ponded water with 5cm depth) up to panicle initiation stage (45 to 50 days after sowing) followed by allowing standing water 3cm \pm 2cm up to maturity recorded higher grain yield (3.88 to 8.75 t/ha) in all the paddy varieties as compared to farmer' method of irrigation consists of allowing continuous standing water of 3 cm \pm 2cm, since planting (3.60 to 8.30 t/ha). The overall average yield of 5.37 t/ha with 6.87% increase was with AWD irrigation demonstration as compared to 5.03 t/ha paddy yield in farmer method of irrigation.

Indian Institute of Rice Research, Hyderabad in collaboration with ZARS, Mandya conducted 5 demonstrations on Green Super Varieties like BRR1 Dhan 75 and BINA Dhan 17. Both the varieties exhibited 37.50 % and 43.75% over the local varieties respectively.

Agricultural Research Station, Gangavathi conducted five FLDs each on Alternate wetting and Drying method of irrigation in rice (with HYV), Improved Samba Mahsuri and IPM in rice. Front line demonstrations on alternate wetting and drying method of irrigation using field water tube comparing with farmers practice of continuous flooding in transplanted rice were conducted on five farmers field in Gangavati taluk of Koppal District. The variety BPT-5204 was transplanted during the 2nd week of August on a demonstration area of one hectare. All other variables were kept constant except irrigation. In the demonstration plots PVC pipes of 35 cm length and 20 cm diameter were selected and made small holes

on the pipe on the lower 15 cm portion and were inserted into the soil up to holed portion near the starting of the field. Soil inside was removed and water level remained same inside the pipe and outside the pipe (in the plot). These pipes were installed 8 days after transplanting. Whenever water level inside falls below 15 cm from the soil surface the plots were reflooded /ponded back to 5 cm standing water. This cycle was followed up to 8 days before harvesting. In the case of control plot continuous flooding of 5 cm was adopted throughout the crop growth period. Grain yield and economics were worked out. The average yield in demonstration plot was 7.01 t/ha. as against 6.74 t/ha. in farmers' plot recording 4% higher grain yield. The average net profit in the demonstration plot was Rs. 69115/ha against Rs 64191/ha in the control plot recording 7.1% higher profit. Farmers opined that although there was not much variation in grain yield but they opined that following Alternate wetting and drying they can save water considerably. Further they opined that brown plant hopper incidence was comparatively low in demonstration plot than continuous flooded plots.

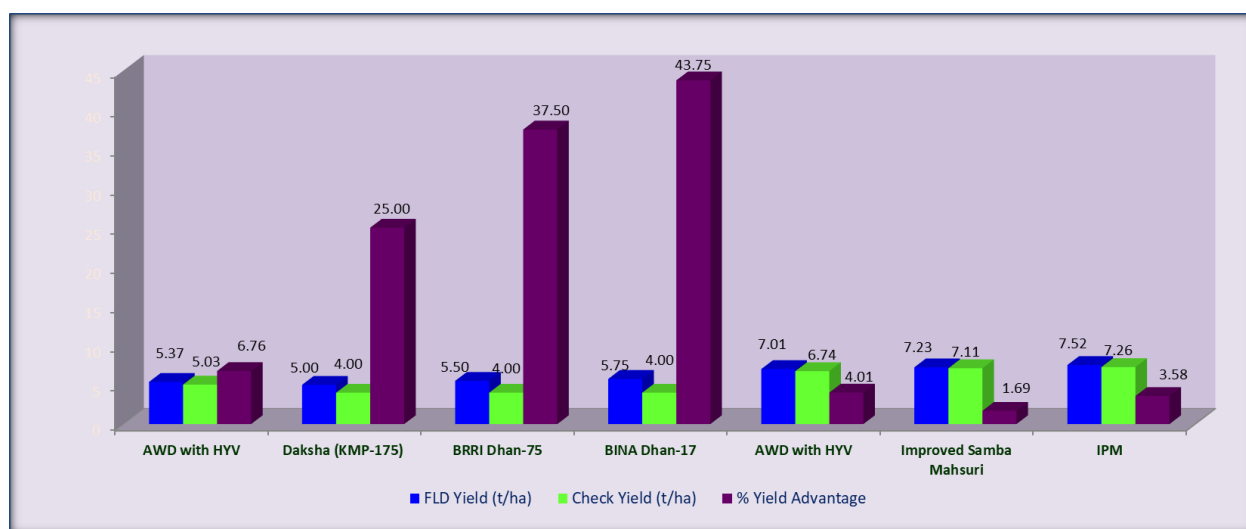
In Tunga bhadra command area rice is being cultivated in an area of about 3.5 lakh ha and the paddy variety BPT-5204 is popular variety among farmers. But the popular paddy variety BPT-5204 is highly susceptible to BLB (bacterial disease) and loss causes up to 30 per cent. In this context, demonstration of BLB resistant paddy variety Improved Samba Mahsuri helped the farmer by saving Rs.8-10 thousand /ha on chemical cost sprayed on to control the BLB disease. Yield was on par as that of BPT 5204 and having grain and cooking quality on par with BPT 5204, fetching same market price as that of BPT 5204.

IPM demonstrations were undertaken in the Sriramanagar (V), Gangavathi (T), Koppal (Dt) with the objective of using floral diversity to increase natural biological control and to augment egg predators of hoppers and thereby manage planthopper pests by enhancing natural enemy fitness. Interventions viz., recently released paddy variety (Improved Samba Mahsuri - BLB disease resistant variety), growing border crop of cowpea and marigold, timely application of bioagents, installation of pheromone traps were undertaken in the integrated pest management fields. Observations were recorded on planthoppers, BLB disease index and their natural enemies throughout the crop period. The population of green mirids, spiders and coccinellids were significantly higher in IPM plots indicating a positive trend for these practices in conservation of natural enemies. The green mirid number in the IPM plots was 10 times higher than that of the farmers practice. There is no incidence of Bacterial Leaf Blight disease in IPM plot as compared to farmers plot. Mean parasitisation by three species of parasitoids in the IPM plots was significantly higher all three dates of observation compared to farmers practice. The yields were also higher in IPM plots.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	AWD with HYV	10	Farmers' practices	Mandya and Tumkur districts	5.37	5.03	6.76
2.	Daksha (KMP-175) under aerobic conditions	10	Rasi	Mandya & Mysore District	5.00	4.00	25.00
3.	B.R.R.I. Dhan-75	3	Local varieties	Mandya District	5.50	4.00	37.50
4.	BINA Dhan-17	2	Local varieties	Mandya District	5.75	4.00	43.75
5.	Alternate wetting and Drying	5	Continuous flooding	Sriramanagar, Baragur	7.01	6.74	4.01

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
	method of irrigation in rice (with HYV)						
6.	Improved Samba Mahsuri	5	BPT-5204	Herur, Sriramanagar, Basavanna camp (Koppal Dt)	7.23	7.11	1.69
7.	IPM in rice	5	Local practices	Sriramanagar (V), Gangavathi (T), Koppal (Dt)	7.52	7.26	3.58



Installing field water tube in farmers field



Alternate wetting and drying irrigation in rice Field day farmers plot visit



Alternate wetting and drying irrigation Farmers training

FINAL REPORT ON FRONTLINE DEMONSTRATION

1.	Crop	Rice
2.	Season	Kharif-2019
3.	Technology being demonstrated	Alternate wetting and drying method of irrigation in rice Through bouman tube
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	30% saving in water
4.	Location (with full address)	Village :Sriramanagar Taluka:Gangavathi District:Koppal State:Karnataka
5.	Category of beneficiary farmers: j. Name with Father's /Husband Name : k. Medium/Small/Marginal/Women : l. SC/ST/General	a. 1.Koteshwar Rao b.Medium c.General
6.	Area under demonstration (ha)	1.0 ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Irrigated
8.	Field Condition (j) Topography (k) Soil Type (l) Native nutrient status Any other information about field condition	Plains Black clay Low in N. high in P and K
9. Production Technology Adopted		
Particulars	FLD Plot	Check – Farmers' practice Plot
(iv) Variety/Hybrid	BPT-5204	BPT-5204
(ii) Seed rate	62.5 kg/ha	75 kg/ha
(iii) Source of Seed	RSK	RSK
(iv) Seed treatment		
(v) Sowing date	June2nd fortnight	June2nd fortnight
(vi) Nursery details seeding density in nursery etc.		

Frontline Demonstration on Rice (2019-20)

(vii) Transplanting date	1st week August	1st week August
(viii) Spacing	Random	Random
(ix) Plant population maintained per ha.	220000	220000
(x) FYM/compost applied	5.0t/ha	5.0t/ha
(xi) Fertilizers applied (g) Basal (NPK kgs/ha) (h) Top dressing : Number of times & stage (NPK kg/ha)	100:100:100 50 N Active tillering 50N Panicle initiation	100:100:100 50 N Active tillering 50N Panicle initiation
(xii) Micro-nutrient used if any (name/quantity)	Zinc Sulphate 20kg/ha	Zinc Sulphate 20kg/ha
(xiii) Weed control (c) Herbicides used (name/quantity) Inter-culture operations (Number)	Butachlor 50EC @2.5kg/ha	Butachlor 50EC @2.5kg/ha
(xiv) No. of irrigation given (crop stage-wise)	AWD(15)	Continuous flooding(20)

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(j) Insect pest	BPH, Stem borer, Leaf folder	BPH, Stem borer, Leaf folder
(i) Name of the pest observed		
(ii) Extent of damage (%)	5-7	12-15
(iii) Name of the insecticide used	Triflumezopyrin	Triflumezopyrin
(iv) Quantity (kg/litre) used	250ml/ha	250ml/ha
(v) Frequency of application	One time	Two time
(vi) Is this a major pest in the area?	Yes	Yes
(k) Diseases observed	BLB, Sheath blight, Falsesmut	BLB, Sheath, Blast blight, Falsesmut
(i) Name of the disease		
(ii) Extent of damage (%)	5-7	10-12
(iii) Name of the pesticide used	Tricyclazole, saaf, nativo	Tricyclazole, saaf, nativo
(iv) Quantity (kg/litre) used	120g, 1250g	120g, 1250g
(v) Frequency of application	One time	Two time
(vi) Is this a major or common disease in the area.	Yes	Yes
(l) Biological control adopted, if any.		

Frontline Demonstration on Rice (2019-20)

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	Ist week of December	Ist week of December
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	Crop cutting	Crop cutting
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	Dr.Mahantha shivayogayya,Scientist(Breeding)	Dr.Mahantha shivayogayya,Scientist(Breeding)
14. Estimate of yield (a) Grain (b) Straw	7150 kg/ha 7700 kg/ha	6900 kg/ha 7300 kg/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	134475 128700 5775	129675 124200 5475
16. Cost of cultivation (ha), Give some major items of expenditure.	62750 Land preparation,Planting,Fertilizers Pesticides,weeding harvesting	62500 Land preparation,Planting,Fertilizers Pesticides,weeding harvesting

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	71725-00
18.	Farmers Reactions (In details)	Grain yield on par but water saving can be achieved
19.	Reaction of neighbouring farmers	Good, water saving technology
20.	Number of visits made to the plot with dates and observations made in each trip.	Two, 12 th September and 14 th october 2019

Field day conducted RP Bio-226 On 09-12-2019 at Basavanna Camp Tq: Gangavathi Dis: koppal



Annexure - V

FINAL REPORT ON FRONTLINE DEMONSTRATION

1.	Crop	Rice
2.	Season	Kharif 2019
3.	Technology being demonstrated	Integrated Pests Management with latest rice variety RP Bio-226
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	<ol style="list-style-type: none"> 1. Promotes sustainable bio-based pest management alternatives 2. Conserves natural enemies 3. Reduces environmental risks 4. Economically viable
4.	Location (with full address)	Village : Sriramanagar Taluka: Gangavathi District: Koppal State: Karnataka
5.	Category of beneficiary farmers: m. Name with Father's /Husband Name : n. Medium/Small/Marginal/Women : o. SC/ST/General	Sri. Prasad Rao Marginal General
6.	Area under demonstration (ha)	0.8ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Irrigated (from TBP command area)
8.	Field Condition (m) Topography (n) Soil Type (o) Native nutrient status Any other information about field condition	Maidan level land Black cotton soil Low in N. high in P and K
9. Production Technology Adopted		
Particulars	FLD Plot	Check – Farmers' practice Plot
(v) Variety/Hybrid	RP Bio - 226	BPT-5204
(ii) Seed rate	62.5 kg/ha	62.5 kg/ha
(iii) Source of Seed	Siddapur RSK	Siddapur RSK
(iv) Seed treatment	Azospirillum and PSB @ 5-10g/kg seeds	No seed treatment
(v) Sowing date	22-08-2019	22-08-2019
(vi) Nursery details seeding density in nursery etc.	300sq meter/acre	300sq meter/acre

Frontline Demonstration on Rice (2019-20)

(vii) Transplanting date	23-09-2019	23-09-2019
(viii) Spacing	20 X 15cm	20 X 10cm
(ix) Plant population maintained per ha.	3,33,333 seedlings/ha	5,00,000 seedlings/ha
(x) FYM/compost applied	5.0 tonnes/ha	5.0 tonnes/ha
(xi) Fertilizers applied (i) Basal (NPK kgs/ha) (j) Top dressing : Number of times & stage (NPK kg/ha)	75:75:75:20 kg/ha N:P:K:Zn 37.5:0:0 kg/ha @ 30DAT 37.5:0:0 kg/ha @ 45DAT	100:50:50:15 kg/ha N:P:K:Zn 75:30:30 kg/ha @ 30DAT 75:0:30 kg/ha @ 45DAT 10:26:26 kg/ha @60DAT
(xii) Micro-nutrient used if any (name/quantity)	Zn – 20kg/ha	Zn – 20kg/ha
(xiii) Weed control (d) Herbicides used (name/quantity) Inter-culture operations (Number)	Butachlor 30EC @ 3lit/ha – 5DAT	Butachlor 30EC @ 3lit/ha – 5DAT Bispyribac sodium 10SC @ 250ml/ha – 25DAT
(xiv) No. of irrigation given (crop stage-wise)	12	17

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(m) Insect pest	Planthoppers, Yellow stem borer, case worm and leaf folder	Planthoppers, Yellow stem borer, case worm and leaf folder
(i) Name of the pest observed		
(ii) Extent of damage (%)	WBPH, BPH – 10-15 hoppers/hill Yellow stem borer and leaf folder – less than 5%damage	WBPH, BPH – 30-40 hoppers/hill Yellow stem borer and leaf folder - less than 5%damage
(iii) Name of the insecticide used	Neemazal @ 3ml/lit Chlorantraniliprole – 4kg/acre <i>Metarhizium anisoplae</i> – 3g/lit	Buprofezin @ 1ml/lit Lambda cyhalothrin @ 1ml/lit Imidacloprid @ 0.5ml/lit Chlorpyrifos @ 2ml/lit Pymetrozine – 0.4g/lit Triflumizopyrim @ 0.5ml/lit
(iv) Quantity (kg/litre) used	Neemazal @ 3ml/lit Chlorantraniliprole – 4kg/acre <i>Metarhizium anisoplae</i> – 3g/lit	Buprofezin @ 1ml/lit Lambda cyhalothrin @ 1ml/lit Imidacloprid @ 0.5ml/lit Chlorpyrifos @ 2ml/lit

Frontline Demonstration on Rice (2019-20)

		Pymetrozine – 0.4g/lit Triflumizopyrim @ 0.5ml/lit
(v) Frequency of application	20-25Days interval	10-15days interval
(vi) Is this a major pest in the area?	Yes	Yes
(n) Diseases observed (i) Name of the disease	Blast, neck blast Sheath blight, stem rot	BLB, Blast, neck blast Sheath blight, stem rot
(ii) Extent of damage (%)	<10%	<5%
(iii) Name of the pesticide used	Trifloxystrobin 25% + Tebuconazole 50% (Nativo 75 WG) @ 0.4g/l	Carbendazim + mancozeb @ 2g/lit Tricyclozole @ 0.6g/lit Streptocyclin @0.005g/lit + COC @ 0.3g/lit, Trifloxystrobin 25% + Tebuconazole 50% (Nativo 75 WG) @ 0.4g/l
(iv) Quality (kg/litre) used	Trifloxystrobin 25% + Tebuconazole 50% (Nativo 75 WG) @ 0.4g/l	Carbendazim + mancozeb @ 2g/lit Tricyclozole @ 0.6g/lit Streptocyclin @0.005g/lit + COC @ 0.3g/lit, Trifloxystrobin 25% + Tebuconazole 50% (Nativo 75 WG) @ 0.4g/l
(v) Frequency of application	20-25Days interval	15-20days interval
(vi) Is this a major or common disease in the area.	Yes	Yes
(o) Biological control adopted, if any.	<i>Metarhizium anisoplae</i> @ 3g/lit Trichocards @ 40,000/acre Pheromone traps @ 15traps/ha	No

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	20-12-2019	20-12-2019
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	crop cutting @ 2X2sq mtr	crop cutting @ 2X2sq mtr
13. Name of person from organizers present at the	Field facilitator	Field facilitator

Frontline Demonstration on Rice (2019-20)

plot at the time of estimate of yield to record it accurately.		
14. Estimate of yield (a) Grain (b) Straw	7712kg/ha 8792kg/ha	7436kg/ha 8551kg/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	Market price @ Rs. 1800/-quintal 1,38,816/- 6594/-	1,33,848/- 6413/-
16. Cost of cultivation (ha), Give some major items of expenditure.	61,375/- Seed cost, puddling, plant protection measures, fertilizer application, labour	73,925/- Seed cost, puddling, plant protection measures, fertilizer application, labour

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	77,441/- per ha
18.	Farmers Reactions (In details)	<ol style="list-style-type: none"> 1. Natural enemies conservation 2. timely application of fertilizers and pesticides 3. Decreased incidence of major pests 4. Less cost of cultivation 5. No BLB Disease
19.	Reaction of neighboring farmers	<ol style="list-style-type: none"> 1. Decreased incidence of major pests 2. Eco-friendly 3. Prevents unnecessary applications of agrochemicals 4. No BLB Disease
20.	Number of visits made to the plot with dates and observations made in each trip.	<p>22-07-2019 for farmers baseline data and sowing</p> <p>23-09-2019 for transplanting</p> <p>13-10-2019 for observations on insect pests</p> <p>20-12-2019 for harvesting data</p>



Kerala

Rice forms the staple food of the people of Kerala and contributes a major share towards its economy. It is grown in a vast array of ecological niches, ranging from regions situated 3 meters below MSL level as in Kuttanadu to an altitude of 1400 m as in the high ranges. It is cultivated under 3 to 4 meters depth of water as well as in purely rainfed uplands with no standing water. Probably nowhere else in the world, rice crop is cultivated under such a diversity of conditions. In Kerala rice is cultivated in an area of 2.08 lakh ha with a productivity of 2.66 t/ha and the annual rice production is 5.55 lakh tons.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	KAU AKSHAYA	8	Uma, Ponmani	Palakkad, Idukki, Thrissur	6.75	6.00	12.50
2.	KAU SUPRIYA	2	Uma	Palakkad	6.53	5.61	16.40
3.	Integrated Nutrient Management	10	Local Practices	Elappully, Alathur and Nemmara	5.55	4.62	20.13
4.	MO 23 (POURNAMI)	5	Mo 16 UMA	Nedumudi & Kainakary village, Chambakulam block, Kuttanad Thaluk, Alappuzha district	6.33	5.32	18.98
5.	Multi nutrient foliar mix (Sampoorna developed by KAU)	5	Uma without micronutrient application	Naluchira padasekharam Purakad Ambalapuzha Alappuzha	6.2	4.8	29.17
6.	Post emergent management of weedy rice using 'KAU Weed Wiper'	5	Mo 16 UMA	Alappuzha	4.6	3.7	24.32
7.	Management of glume discolouration disease	5	Mo 16 (Uma)	Naluchira padasekharam, Purakkad, Ambalapuzha, Alappuzha	5.77	4.16	38.82
8.	Conservation of natural enemies for the management of insect pests in rice	5	Mo 16 (Uma)	Champakkulam, Kuattanad, Alappuzha	3.87	4.82	The reduction in the use of chemical insecticides and population

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
							build up and conservation of natural enemies in the field

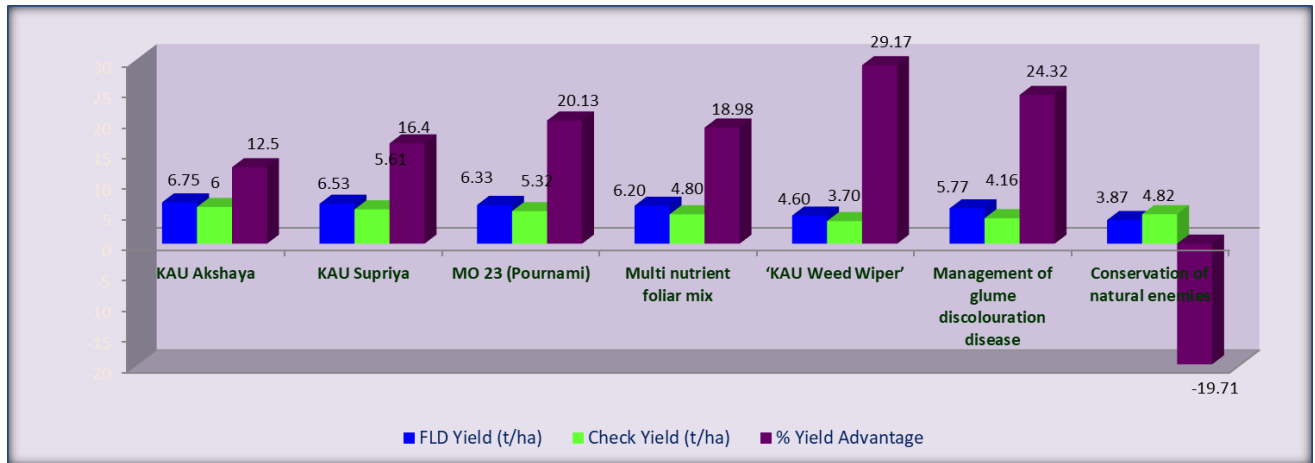
RARS, Pattambhi conducted demonstration on high yielding varieties like KAU Supriya (PTB 61) and KAU Akshaya (PTB 62). Both these varieties exhibited higher yield advantage compared to the usually grown Uma and Ponmani.

Recent years the utilization of microbial fertilizers, liquid fertilizers are very limited in rice areas of Kerala. Hence an INM package is being taken up and Indian Institute of Rice Research organized 10 hectares of rice fields in three different panchayats Viz., Elappully, Alathur and Nemmara. Fields were geo tagged and the timely implement all the packages proposed and results observed as follows,

Popularizing the INM Packages including LCC chart / Foliar Nutrition in Rice farming			
Geographical location	YIELD t / Ha		Yield Adv.(%)
	INM	Control	
Nemmara			
10.34.31.3N, 76.36.19.6- E	5.88	4.84	21.38
10.34.44.7N, 76.36.32.8- E	6.50	5.04	29.10
10.34.35.4 N, 76.35.06.9 E	4.25	3.46	22.69
10.34.36.4 N, 76.35.11.1E	5.35	4.65	15.09
Alathur			
10.64.31.3N, 76.55.19.6- E	6.06	5.25	15.52
Elappully			
10.45.31.3N, 76.46.50.6- E	5.12	4.65	10.19
10.45.28.8N, 76.45.04.7- E	6.60	5.13	28.78
10.44.19.4N, 76.45.47.1- E	4.68	3.99	17.44

INM packages particularly the use of phosphobacterium to mobilize the occluded phosphorous in P rich acidic rice fields also the nutritional sprays of liquid NPK and Naturally chelated micronutrient liquids were lifted the rice crop and gave yields when compared to the control. The yield advantages of minimum of 700 kg to 1400 kg extra yield per hectare were recorded.

Frontline Demonstration on Rice (2019-20)



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RARS Moncompu conducted 25 FLDs. Five demonstrations each were conducted on MO 23 (POURNAMI), Multi nutrient foliar mix (Sampoorna developed by KAU), Ready to use multi nutrient mix, KAU Weed Wiper, Management of glume discolouration disease and Conservation of natural enemies for the management of insect pests in rice

Varietal demonstration on Pournami (MO 23)

Five demonstrations on Pournami (MO 23) in Nedumudi & Kainakary village, Chambakulam block, Kuttanad Thaluk, Alappuzha district performed on par in terms of yield better in earliness, resistance to biotic stresses and cooking quality when compared to variety Uma.

Multi nutrient foliar mix (Sampoorna developed by KAU) application in rice fields

Wide spread deficiency of boron and magnesium was evidenced in the soil samples of Kuttanad. The acid, leaching environment is not conducive for the retention of majority of the nutrients and over dominance of iron in Kuttanad soils result in the physiological deficiency of other cations such as zinc, copper and even potassium. Moreover, now-a-days multi-nutrient deficiencies are occurring very commonly in the area. Therefore, a soil and crop specific multi-nutrient mixture suitable for foliar application is the need of the hour. Considering the extent of deficiencies and impaired availability of essential nutrients, multi-nutrient mixtures developed at KAU “Sampoorna” were found to give better performance on foliar application. The low uptake of nutrients through roots developed as a result of soil nutrient constraints in paddy soils can be corrected by the foliar application. “Sampoorna” contains zinc (5-7%), boron (3.5-4.5%), copper (0.3-0.5%), iron (0.2%), manganese (0.2%) and molybdenum (0.02%). The multi nutrient mix was sprayed at 30 and 50 DAS in rice fields to improve the crop growth and enhance the yield. The application of this multi-nutrient foliar mix has resulted in upto 30% of yield advantage in the demonstrated plots.



Post emergent management of weedy rice using ‘KAU Weed Wiper’

Weedy rice infestation is severe in the rice fields of Kuttanad and farmers are forced to abandon rice cultivation. Hand weeding of weedy rice is practically impossible and incomplete due to morphological similarity of weedy rice to cultivated rice during early stages of growth, acute labour shortage and high cost of labour. Moreover, biochemical and genotypic similarity between weedy rice and the crop makes herbicidal control in standing crop impossible. An integrated weedy rice management package developed for wet sown rice at the station was demonstrated. This includes stale seed bed technique, pre sowing surface application of oxyfluorfen and selective drying of weedy rice panicles by direct contact application using specially designed KAU Weed Wiper.



There is no viable technology for post emergence management of weedy rice with herbicides due to its mimicry to the cultivated rice and lack of herbicides for selective control of weedy rice which has the similar genome as cultivated rice. The novel hand held weed wiper device 'KAU Weed Wiper' can selectively dry the panicles of weedy rice at 60-65 DAS, taking advantage of the height difference of 15-20 cm between weedy rice and cultivated rice. Direct Contact Application can be effectively done in weedy rice infested crop using the herbicide glufosinate ammonium 15 SL at 8-10 % concentration. Weed control efficiency by this method was as high as 83 to 88%. The technology reduced the seed rain and buildup of soil seed bank of weedy rice. It is highly energy efficient, less labour intensive, and eco-friendly compared to hand weeding, cutting of weedy rice ear heads or application of large quantity of herbicides using sprayers. The device has become popular among the farming community. 'KAU Weed Wiper' is now marketed by M/s Raidco Kerala Ltd.

Conservation of natural enemies for the management of insect pests in rice

To conserve the indigenous natural enemies present in the fields because of their ability to suppress the upcoming insect pest population, technology on 'Conservation of natural enemies for the management of insect pests in rice' was demonstrated in selected farmers fields who were interested in organic rice cultivation. The practice mainly concentrated on the avoidance of use of chemical insecticides and fungicides in the field. The regular organic cultivation practices were followed by the farmers. The flower crops (marigold) and vegetable crops were grown on the bunds of rice fields as a part of ecological engineering to attract the natural enemies. The trichocards (*Trichogramma japonicum* and *T. chilonis*) were placed in rice fields @ 5cc/ha when moth activity was observed in the field (inundative release). Neem based insecticide (Nimbecidine®- azadiractin 0.03%) was used to avoid the attack of sucking insects. The farmers used fish jaggery extract @6 ml/l against rice bug, *Leptocorisa acuta*.



The insect pest population was observed to be less even without the application chemical insecticides. The abundance of biocontrol agents were observed to be more in the FLD plots compared to the farmers fields. The common natural enemies observed were hymenopteran parasitoids, coccinellid beetles, spiders, dragon flies and damsel flies. Though the yield was less compared to normal practices, reduction in the use of chemical insecticides and population build up and conservation of natural enemies was observed in the field.

Management of glume discoloration disease in rice

Unlike yesteryears, grain discoloration has become major problem in Kuttanad region due to increasing biotic and abiotic stresses. Grain discoloration caused by many fungal pathogens affected grain yield varying from 20 to 50 per cent and quality. It is very severe in the acid soils of Purakkad Kari and Vaikom Kari areas. Demonstrations were undertaken with the contact and systemic action fungicide (Saaf 75 WP @1.5 g/l) sprayed as prophylactic manner just before the panicle emergence. It could control the complex pathogens causing grain discoloration and the results showed that the yield was increased for about 28% compared to farmers practice. The quality of the grains improved and yield of Kari soil area (Extremely acid soil) increased from 1.6 ton to 2.3 ton/acre.



Annexure

1.	Crop	Rice
2.	Season	Kharif
3.	Technology being demonstrated	New variety- MO 23 (POURNAMI)
4.	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	<ul style="list-style-type: none"> • High yield • Pest and disease resistance • Duration lesser than the popular variety
5.	Location (with full address)	Village : Kainakary South Taluka: Kuttanad District: Alappuzha State: Kerala
6.	Category of beneficiary farmers: p. Name with Father's /Husband Name : q. Medium/Small/Marginal/Women : r. SC/ST/General	Monichan Chacko S/o Chacko Marginal General
7.	Area under demonstration (ha)	1
8.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Rainfed low land (Below MSL)
9.	Field Condition (p) Topography (q) Soil Type (r) Native nutrient status Any other information about field condition	Wet land polder Clay loam High organic Carbon, Medium Phosphorous, Medium potassium (after flood 2019)

10. Production Technology Adopted		
	Pournami	Check – Farmers' practice Plot
(vi) Variety/Hybrid	Pournami	Uma
(ii) Seed rate	100 Kg/ha	140Kg/ha
(iii) Source of Seed	Seed from certified growers	Seed agency KSSDA
(iv) Seed treatment	Yes	No
(v) Sowing date	September last week	First to Mid-October
(vi) Nursery details seeding density in nursery etc.	NA	NA
(vii) Transplanting date	NA	NA
(viii) Spacing	DSR	DSR
(ix) Plant population maintained per ha.	80,00,000/ Ha	10,00,000/ Ha
(x) FYM/compost applied	2000 kg	0
(xi) Fertilizers applied (k) Basal (NPK kgs/ha)	Fertilizer application NPK @ 90:45:45 kg/ha	Fertilizer application NPK @ 120:45:60 kg/ha

Frontline Demonstration on Rice (2019-20)

(e) Top dressing : Number of times & stage (NPK kg/ha)	1. Basal NPK @ 30:22.5:15 kg/ha 2. Tillering NPK @30:22:15 kg/ha 3. Panicle initiation NPK@30:0:15 kg/ha	1. Basal NPK @ 40:22.5:20 kg/ha 2. Tillering NPK @40:22.5:20 kg/ha 3. Panicle initiation NPK@40:0:20 kg/ha
(xii) Micro-nutrient used if any (name/quantity)	Borax- 7.5 kg/ha Magnesium sulphate @50 kg/ha	No
(xiii) Weed control (p) Herbicides used (name/quantity) Inter-culture operations (Number)	Clincher @ 2.5l/Ha	Bispyribac sodium+ Almix 300 ml/acre
(xiv) No. of irrigation given (crop stage-wise)	Flooding one in a week for 3 days	Flooding and draining

11. Plant protection measures adopted		
Particulars		
	Pournami	Check Farmers' practice plot
(q) Insect pest	Nil	BPH
(i) Name of the pest observed		
(ii) Extent of damage (%)	Nil	25%
(iii) Name of the insecticide used	Nil	Thiomethoxam
(iv) Quantity (kg/litre) used	Nil	2g/10 l
(v) Frequency of application	Nil	Once
(vi) Is this a major pest in the area?	Nil	Yes
(r) Diseases observed	Nil	Sheath blight and BLB
(i) Name of the disease		
(ii) Extent of damage (%)	Nil	25%
(iii) Name of the pesticide used	Nil	Bavistin, Psuedomonas
(iv) Quality (kg/litre) used	Nil	2g/l, 10g/l
(v) Frequency of application	Nil	once
(vi) Is this a major or common disease in the area.		Yes
1. Biological control adopted, if any.	Pseudomonas seed treatment	Nil

Frontline Demonstration on Rice (2019-20)

Particulars	Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5	Check Farmers' practice plot
11. Date of harvesting	06.11.19	06.11.19	05.11.19	05.11.19	05.11.19	17.11.19
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	Harvesting of unit area					
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	Ambily A.K, Asst. Professor (Pl. Breeding & Genetics)					
14. Estimate of yield (a) Grain	5.75 t/ha	6 t/ha	6.6 t/ha	7.0 t/ha	6.3 t/ha	5.3 t/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	Rs 26/kg Not sold	Rs 26/kg Not sold	Rs 26/kg Not sold	Rs 26/kg Not sold	Rs 26/kg Not sold	Rs 26/kg Not sold
16. Cost of cultivation (ha), Give some major items of expenditure.	Rs 58,000/ha	Rs 58,000/ha	Rs 58,500/ha	Rs 59,000/ha	Rs 59,000/ha	Rs 61,000/ha
17. Net profit to the farmer by adopting the technology (Rs/ha.)	Rs. 45500	Rs 28600	Rs. 15600	Rs. 20800	Rs.20800	

18.	Farmers Reactions (In details)	They were of the opinion that the crop had low incidence of pests and diseases. So the cost of cultivation was less. The yield was also good comparing the local check. The new varieties have stress tolerance capacity compared to Uma
19.	Reaction of neighboring farmers	The farmers are of the opinion that the variety has more yield and pest resistance compared to Uma - MO 16, the popular variety of Kuttanad
20.	Number of visits made to the plot with dates and observations made in each trip.	No.of visit: 4 Date of visit: 07.09.19, 04.10.19, 05.11.19, 06.11.19 Observations on no of hills, tillers, productive tillers, plant height, pests and disease incidence at seedling, tillering and maturity stage of the crop.

Madhya Pradesh

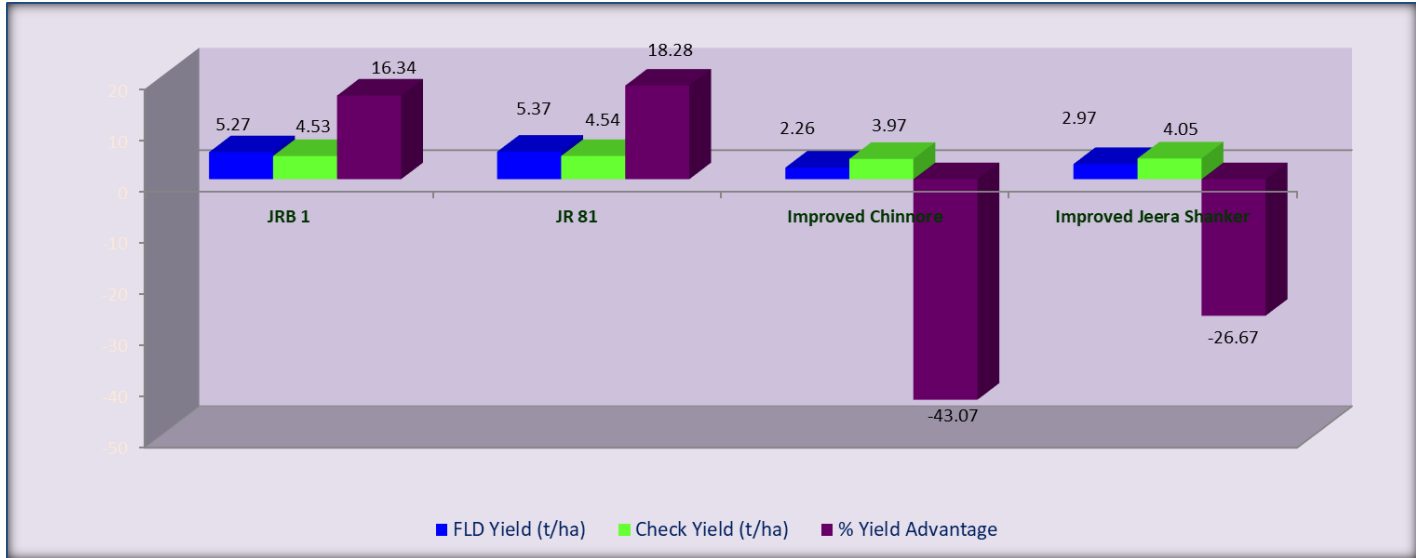
In **Madhya Pradesh** rice grown in wet season in the area of about 1.65 m ha with low productivity (2.01 t/ha) under upland ecosystem whereas, under irrigated ecosystem the productivity is ranging from (4.0-5.0 t/ha). The cause of low productivity is due to uneven / erratic rainfall unbalanced and inadequate use of fertilizer and incidence of pest and diseases.

All India Coordinated Rice Improvement Project IIRR - ICAR and JNKVV College of Agriculture Balaghat organized FLD's on rice in 30 ha during Kharif 2019 on recently released varieties like Improved Jeera Shankar, Improved Chinnor, JR 81 and JRB 1 under rainfed / irrigated ecosystem at villages-Nilji, Garra, Botta Hajari & koste Block-Lalburra & Waraseoni (Balaghat) to demonstrate the relative yield advantage, increased cropping intensity, weed management and plant protection measures over existing farmers practice and to popularize scented rice. Owing to scarcity of water due to low rainfall scenario, 75 demonstrations on partial System of Rice Intensification with Improved Jeera Shankar, Improved Chinnor, JR 81 & JRB 1 were taken up. These partial SRI demonstrations not only increased grain yield but also saved water by 30% which is quantified by number of irrigations and it may be easily advocated specially wherever the crop irrigated by bore wells and controlled irrigation facilities are available. JR 81 (115 - 120 days) and JRB 1 (120 - 125 days) helped the farmers to use the residual moisture after harvesting for rabi crops due to early maturity.

In case of the scented varieties, demonstrated technologies namely improved Jeera Shankar and Improved Chinnor reported lower average yield in comparison with the local varieties but fetched more net profit as compared to existing variety (Value of grain paddy was Rs.4000/Qtl as compared with minimum support price of Rs. 1815.00/qtl). Moreover, these varieties Improved Jeera Shankar & Improved Chinnor exhibited tolerance to Gall midge, bacterial blight and false smut.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	JRB 1	10	MTU 1010	V.Koste, Bl. Waraseoni, Dist. Balaghat	5.27	4.53	16.34
2.	JR 81	8	MTU 1010	V. Botta Hajari, Bl. Lalburra, Dist. Balaghat	5.37	4.54	18.28
3.	Improved Chinnore	6	Jai sree Ram, Sonam	V.Garra, Bl. Lalburra, Dist. Balaghat	2.26	3.97	-43.07
4.	Improved Jeera Shanker	6	Jai sree Ram, Sonam	V.Nilji, Bl. Lalburra, Dist. Balaghat	2.97	4.05	-26.67

Frontline Demonstration on Rice (2019-20)



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A view of Improved Chinnore performance at Village Garra, Improved Jeerashankar performance at Village Nilji, JRB 1 performance at Village Koste and JR 81 performance at Village Botte Hajari of district Balaghat (M P)



Seed Distribution & training at Botte Hajari



Seed Distribution & training at Nilji



Seed Distribution & training at Garra



Seed Distribution & training at Koste



Nursery bed preparation



Transplanting

Frontline Demonstration on Rice (2019-20)



Inputs Distribution & training at Botte Hajari



Inputs Distribution & training at Koste



Inputs Distribution & training at Nilji



Inputs Distribution & training at Garra



Field visit & monitoring Botta Hajari



Field visit & monitoring Nilji



Field visit & monitoring Garra



Field visit & monitoring Botta Hajari



Improved Jeerashankar lodging due to tall



Improved Chinnor lodging due to tall

Maharashtra

In **Maharashtra** rice is the second important crop of the people, which is grown over an area of 14.99 lakh hectares with an annual rough rice production of 32.37 lakh tones. The average productivity of the state is 2.01 t/ha. The average productivity of the Maharashtra state is low as compared to other rice growing states viz. Punjab, Tamil Nadu, Haryana, Andhra Pradesh etc. The area (7.32 lakh ha) of rice crop is more in Vidarbha region. The highest productivity was observed in Konkan region i.e. 2.56 t/ha (3.65 t/ha for raw rice). Marathwada region is the non-traditional rice growing area. Due to the erratic and less rainfall in Marathwada region, the average productivity of rice crop is lowest i.e. 0.41 t/ha (0.59 t/ha for rough rice).

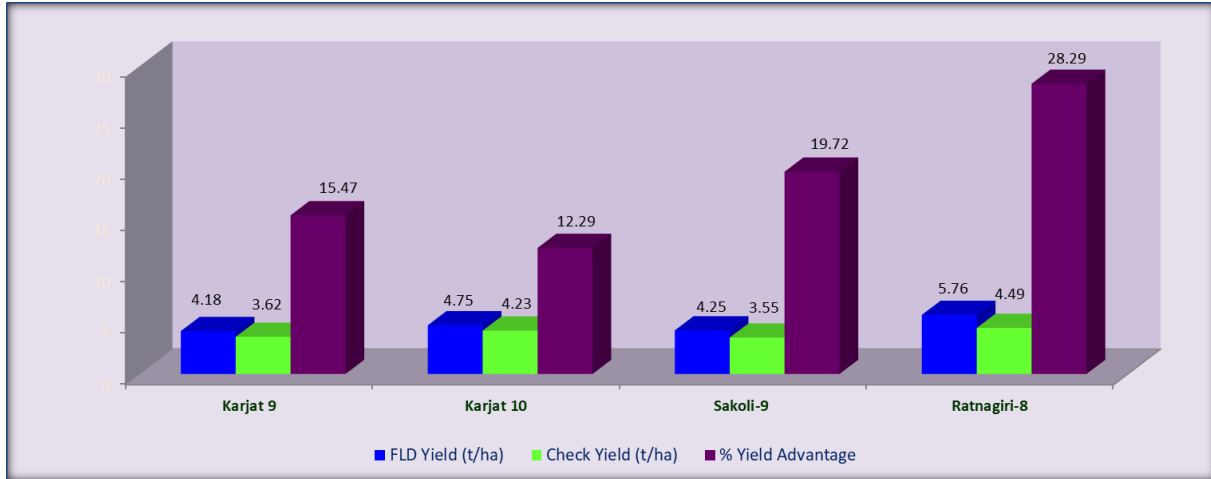
Agricultural Research Station, Shirgaon conducted 20 FLDs on the improved high yielding variety Ratnagiri 8 in the districts of Palghar, Ratnagiri, Sindhudurg, Raigad. In the demonstrated fields the variety Ratnagiri 8 performed well and yielded 28% more than that of the Swarna. Farmers expressed their satisfaction that it is good for early maturity and better grain & straw yield.

Agriculture Research Station, Sakoli conducted demonstrations on high yielding variety - Sakoli 9 in 11 farmers fields in Bhandara district. Although there was less rainfall in the demonstrated villages, high yielding technology exhibited nearly 20% yield advantage over the variety Swarna. Farmers were happy that no major pest was found in Sakoli 9 where as heavy infestation of gall midge and blast occurrence was reported in local check varieties.

Regional Agricultural Research Station, Karjat conducted demonstrations on Karjat 9 and Karjat 10. Both were having higher yield advantage compared to the local checks.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Karjat 9	5	Local varieties	Raigad, Karjat	4.18	3.62	15.47
2.	Karjat 10	5	Local varieties	Karjat, Raigad	4.75	4.23	12.29
3.	Sakoli-9	5	Local varieties	Jambhili Sadak, Sakoli Tk, Bhandara Dt	4.25	3.55	19.72
4.	Ratnagiri-8	20	Swarna	Palghar, Raigad, Ratnagiri, Sindhudurg	5.76	4.49	28.29

Frontline Demonstration on Rice (2019-20)

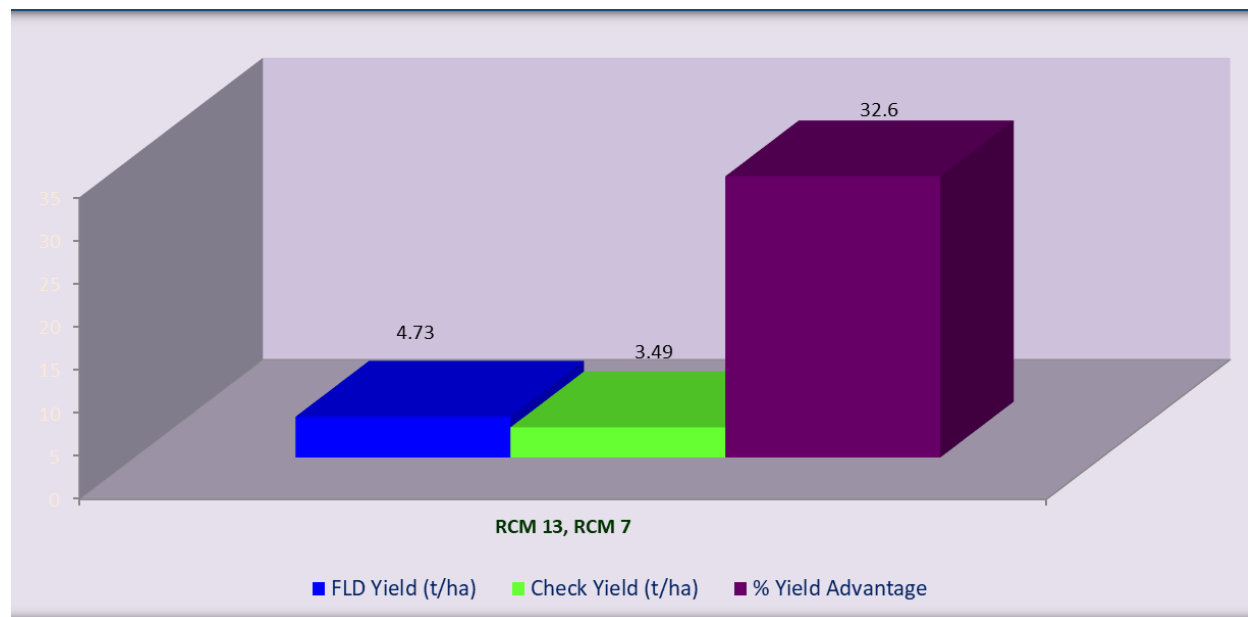


Manipur

Rice is cultivated in 9 districts of Manipur. Out of which 4 districts are under high productivity and rest 5 districts are in low productivity groups. Triennium average area of high productivity group (yield more than 2,500 kg/ha) comprising of 4 districts was 1.11 lakh hectares, which was 60.3% of triennium average area (1.84 lakh hectares) under rice in the state. Triennium average production was 3.31 lakh tonnes, which was 80.7% of triennium average production (4.10 lakh tonnes) of rice in the State. Triennium average productivity of high productivity group comprising of 4 districts was 2,982 kg/ha as against 2,228 kg/ha triennium average productivity of the State. About 60% of total area under rice in the State is concentrated in high productivity group and accounts for about 80% of total rice production in the State. Triennium average productivity of the State is 2,228 kg/ha, which is about 14% higher than triennium average productivity of the country.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1	RCM 13 RCM 7	5	Kumbiphou local land race	Kumbi village cluster, Bishnupur district	4.73	3.49	32.6

Central Agricultural University, Imphal conducted 5 demonstrations on sticky rice varieties. RCM 7 is the successful variety preferred by the farmers of the state released by ICAR-RC for NEH region, Manipur centre. RCM 13 is the high yielding promising variety, released during 2018 and has higher productivity and good quality grains preferred in the region. Among the front line demonstrations conducted in the state, the average yield in the improved practice was 4.73 t/ha which was 32.7% higher than the farmer’s practice (3.13 t/ha). The cost of cultivation under Improved practice was Rs. 52, 011/- and farmer’s practice was Rs. 41, 317/-. The net returns were 44.3 % higher in improved practice (Rs. 45, 501/-) compared to farmer’s practice (Rs. 23, 776/-) per hectare.



ANNEXURE - V

FINAL REPORT ON FRONTLINE DEMONSTRATION

1.	Crop	Rice
2.	Season	<i>Kharif 2019</i>
3.	Technology being demonstrated	Full Package technology
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	RCM 7 is the successful variety preferred by the Farmers of the state released by ICAR-RC for NEH region, Manipur centre. RCM 13 is the high yielding promising variety, released during 2018 has higher productivity and good quality grains preferred in the region.
4.	Location (with full address)	Village : Khumbi Taluka: Bishnupur District: Bishnupur State: Manipur
5.	Category of beneficiary farmers: a. Name with Father's /Husband Name : b. Medium/Small/Marginal/ Women : c. SC/ST/General	Kh. Nepoliean Meetei S/O Small farmer General
6.	Area under demonstration (ha)	1.00 ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Rainfed
8.	Field Condition (a) Topography (b) Soil Type (c) Native nutrient status Any other information about field condition	Around 4-6% slope Deep black soils -NA-
9. Production Technology Adopted		Package of practice
Particulars	FLD Plot	Check – Farmers' practice Plot
(i) Variety/Hybrid	RC Maniphou 7; RC Maniphou 13	Local variety
(ii) Seed rate	30 kg/ha	40 kg/ha
(iii) Source of Seed	ICAR-RC, Manipur centre	Previous year seeds
(iv) Seed treatment	Hot water treatment	Hot water treatment

Frontline Demonstration on Rice (2019-20)

(v) Sowing date	03-07-2019	26-06-2019
(vi) Nursery details seeding density in nursery etc.		Nil
(vii) Transplanting date	27-07-2019	20-07-2019
(viii) Spacing	20 x 10	Direct seeding
(ix) Plant population maintained per ha.	500000/ha	-
(x) FYM/compost applied	5 tons per ha	5 tons per ha
(xi) Fertilizers applied (a) Basal (NPK kgs/ha) (b) Top dressing : Number of times & stage (NPK kg/ha)	30:40:30 15:0:0 (Tillering) 15:0:0 (Panicle initiation)	40:40:20
(xii) Micro-nutrient used if any (name/quantity)	5 kg Zinc sulphate	Nil
(xiii) Weed control (a) Herbicides used (name/quantity) Inter-culture operations (Number)	Nil	Nil
(xiv) No. of irrigation given (crop stage-wise)	Nil	Nil

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(a) Insect pest	Stem borer	NA
(i) Name of the pest observed		
(ii) Extent of damage (%)		
(iii) Name of the insecticide used	Cholopyriphos	Nil
(iv) Quantity (kg/litre) used		
(v) Frequency of application	2 times	
(vi) Is this a major pest in the area?		
(b) Diseases observed		
(i) Name of the disease		
(ii) Extent of damage (%)		
(iii) Name of the pesticide used		
(iv) Quantity (kg/litre) used		
(v) Frequency of application		
(vi) Is this a major or common disease in the area.		
(c) Biological control adopted, if any.		

Frontline Demonstration on Rice (2019-20)

Particulars	FLD Plot	Check Farmers' practice plot		
11. Date of harvesting	23 rd October 2019	29 th October, 2019		
12. Method adopted for estimate of yield (crop cutting, sampling method etc. Give details)	Sampling method (one sq m area is selected in 5 locations and average is calculated and converted to per ha basis)	Crop cutting by farmer and threshing in farm land		
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	Dr. M. Samuel Jeberson, Plant Breeder, AICRP on MULLaRp and AICRP on Wheat and Barley	Dr. M. Samuel Jeberson, Plant Breeder, AICRP on MULLaRp and AICRP on Wheat and Barley		
14. Estimate of yield (a) Grain (b) Straw	4291 kg/ha 6360 kg/ha	3119 kg/ha 5199 kg/ha		
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	Rs. 85820/ha Rs. 3180/ha	Rs. 59720/ha Rs.2600/ha		
16. Cost of cultivation (ha), Give some major items of expenditure.	Preparatory tillage	13680	Preparatory tillage	12480
	Manures and Manuring	6355	Manures and Manuring	3715
	Seeds and Sowing	10544	Seeds and Sowing	5424
	Irrigation	0	Irrigation	0
	Weeding After tillage care	9572	Weeding After tillage care	9572
	Harvesting and Marketing	11760	Harvesting and Marketing	10080
	Others	100	Others	100
	Total cost of cultivation	52011	Total cost of cultivation	41371

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	Rs. 36989/ha
18.	Farmers Reactions (In details)	Farmer was happy with the new variety and inputs given to him and assured his co-operation in conducting demonstrations with new technologies if any in future and will be adopting this in the coming year also.
19.	Reaction of neighboring farmers	Showing interest to participate in the demonstration
20.	Number of visits made to the plot with dates and observations made in each trip.	3 visits (27 th June- Nursery preparation) (27 July – Transplanting) (23-10-2019- Harvesting)



Odisha

In **Odisha** rice is cultivated in an area of 40.04 lakh ha with a productivity of 1.448 t/ha and the annual rice production is 58.15 lakh tons. In Orissa, rice is synonymous with food; agriculture in Orissa to considerable extent means growing rice. Age-old social customs and festivals in Orissa have strong relevance to different phases of rice cultivation: Akhyatrutiya in May-June marks the seeding of rice, Rajasankranti in mid June marks the completion of sowing, Garbhanasankranti in October symbolizes reproductive phase of rice while Nuakhae and Laxmipuja coincide with harvesting of upland and lowland rice respectively. Makarsankranti in mid January is celebrated as Chaita Parab by the tribal people as by this time rice is threshed and brought to the granary.

National Rice Research Institute, Cuttack organized 60 FLDs on 12 varieties like CR Dhan 100 (Satyabhama), CR Dhan 101 (Ankit), CR Dhan 201, CR Dhan-203, CR Dhan-204, CR Dhan-205, CR Dhan-206 (Gopinath), CR Dhan-304, CR Dhan-306, CR Dhan-310, CR Dhan-311 and CR Dhan-601. Demonstrating cafeteria of varieties with duration varying from 110 days to 135 days and other significant features for the farmers to choose from is worth appreciating.

A promising variety CR Dhan 306 of 125 days duration demonstrated in Dhenkanal Cluster exhibited 25% yield advantage compared to the local varieties. Likewise, series of new varieties released by NRRI, Cuttack were demonstrated in different clusters. All the varieties demonstrated have recorded impressive yield advantages and farmers were willing to adopt these varieties in subsequent seasons.

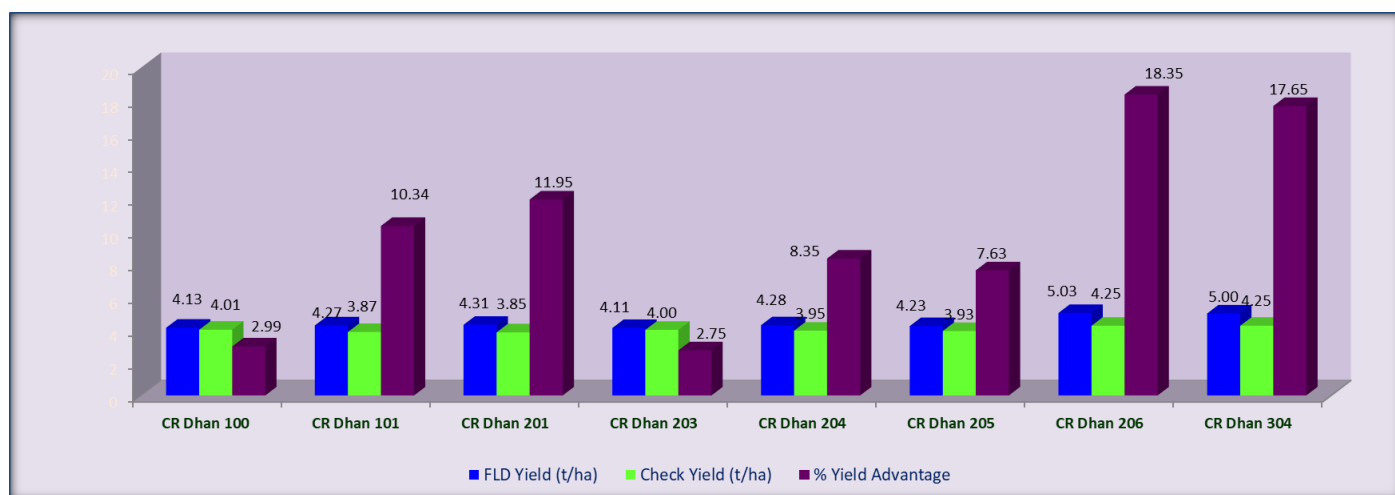
RRTSS, Jeyapore (OUAT) conducted 10 demonstrations on varieties Pratikshya and Hasanta. Pratikshya is medium bold grain type variety of 130 – 140 days duration where as Hasanta is of 140 - 150 days and has short bold grain type. On overall basis, varieties Hasanta and Pratikshya exhibited yield advantages of 13.52% and 5.53% over Swarna respectively. Both the varieties exhibited tolerance to BPH as compared to Swarna.

Department of Plant Breeding & Genetics, College of Agriculture, OUAT conducted 10 demonstrations on Hasanta variety in Khordha district that gave nearly 20% yield advantage over Swarna variety.

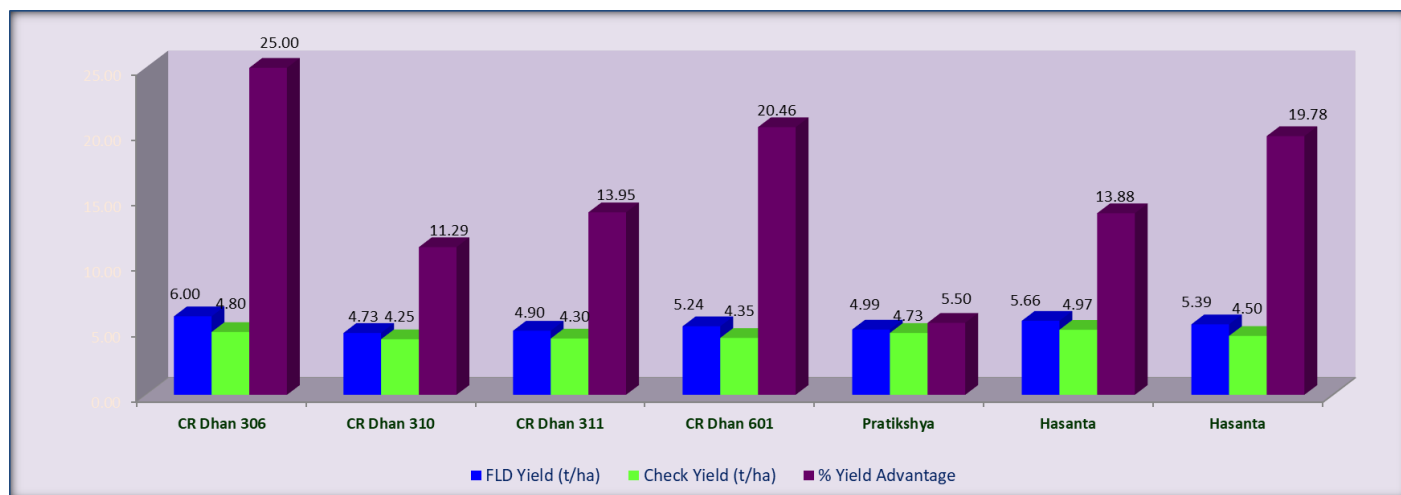
S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	CR Dhan 100	50	Local varieties	Jajpur Cluster	4.13	4.01	2.99
2.	CR Dhan 101		Local varieties	Kendrapada Cluster, Cuttack Cluster, Odapada-Dhenkanal Cluster	4.27	3.87	10.34
3.	CR Dhan 201		Local varieties	Jajpur Cluster	4.31	3.85	11.95
4.	CR Dhan 203		Local varieties	Jajpur Cluster	4.11	4.00	2.75
5.	CR Dhan 204		Local varieties	Jajpur Cluster	4.28	3.95	8.35
6.	CR Dhan 205		Local varieties	Kendrapada Cluster, Cuttack	4.23	3.93	7.63

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
				Cluster, Odapada-Dhenkanal Cluster			
7.	CR Dhan 206		Local varieties	Dhenkanal cluster	5.03	4.25	18.35
8.	CR Dhan 304		Local varieties	Dhenkanal cluster	5.00	4.25	17.65
9.	CR Dhan 306		Local varieties	Dhenkanal Sadar-Dhenkanal cluster	6.00	4.80	25.00
10.	CR Dhan 310		Local varieties	Dhenkanal Cluster, Cuttack Cluster, Kendrapada cluster	4.73	4.25	11.29
11.	CR Dhan 311		Local varieties	Jajpur cluster	4.90	4.30	13.95
12.	CR Dhan 601		Local varieties	Jajpur cluster	5.24	4.35	20.46
13.	Pratikshya	8	Local varieties	Chotodiput, GP-Gadapodar, Block – Jeypore, Dist – Koraput	4.99	4.73	5.50
14.	Hasanta	2	Local varieties	Chotodiput, GP-Gadapodar, Block – Jeypore, Dist – Koraput	5.66	4.97	13.88
15.	Hasanta	10	Swarna	At/PO-Bhakar Sahi Block- Balipatna Dist- -Khordha	5.39	4.50	19.78



Frontline Demonstration on Rice (2019-20)



Performance of ICAR-NRRI varieties under FLD programme in Odisha



**Frontline Demonstration on Rice, Jeypore 2019-20 Kharif
Technical Report**

Title of the experiment	:	Popularisation of BPH tolerant rice variety Hasanta and Pratikshya .
Objective	:	To evaluate the performance of variety Hasanta and Pratikshya with respect to yield, lodging and tolerant to BPH at Koraput districts.
Investigator	:	Sri Mihir Ranjan Mohanty, Junior Breeder-cum-Officer-In-Charge, RRTTSS, Jeypore
Location	:	Chotodiput, GP- Gadapodar, Block – Jeypore, Dist – Koraput, ODISHA
FLD Plots	:	Pratikshya and Hasanta
Check Plots	:	Swarna
Date of start of the project	:	<i>Kharif, 2019</i>
Period for which report submitted	:	<i>Kharif, 2019</i>
No of Farmers	:	25
Date of Nursery Sowing	:	24.06.2019 to 22.07.2019
Date of transplanting	:	23.07.2019 to 20.08.2019
		Line Transplanting
Spacing	:	20cm × 15cm
Seed Rate	:	50 Kg/ha
Fertilizer dose	:	60-30-30 kg N-P ₂ O ₅ -K ₂ O/ha
Plant Protection	:	Need based
Data Recorded	:	Days to 50% flowering, Plant Height (cm) No of tillers/m ² , Yield (Kg/ha) Notes on BPH , Notes on other insects and diseases
Results in Nutshell	:	On overall basis varieties Hasanta and Pratikshya exhibit yield advantages of 13.52% and 5.53% over Swarna respectively. Both the varieties exhibit tolerance to BPH as compare to Swarna. HASANTA Duration: 140 - 150 days Preferable Ecology: Lowland; Grain Type: SB Stay Green Characteristics PRATIKSHYA Duration: 130 – 140 days; Preferable Ecology: Mediumland; Grain Type: MB

WEATHER DATA DURING GROWTH PERIOD

	Month 1 June-19	Month 2 July-19	Month 3 August- 19	Month 4 Sept-19	Month 5 Oct-19	Month 6 Nov-19	Month 7 Dec-19
No. of rainy days	13	29	26	22	19	1	0
Total rainfall (mm)	215.50	681.10	755.00	399.00	297.80	48.40	0.00
Avg. Maximum Temperature (°C)	40	34	32	33	32	31	30
Avg. Minimum Temperature (°C)	21	20	20	21	19	13	9

Tamil Nadu

About 94% of total area under rice in the State is concentrated in high productivity group, which accounts for about 98% of total production of rice in the State. Out of 28 rice growing districts of Tamil Nadu, 27 districts are under high productivity group and one district is under low productivity group. The average productivity of rice in Tamil Nadu is 3,494 kg/ha, which is 79% higher than average productivity (1,947 kg/ha) of the country. Paddy is the principal crop extensively cultivated in all the districts of the state having a unique three-season pattern viz., Kar/Kuruvai /Sornavari (April to July), Samba/ Thaladi/Pishanam (August to November) and Navarai/ Kodai (December to March).

Tamil Nadu Rice Research Institute, Aduthurai, Thanjavur district, conducted “varietal demonstration of ADT 53 and ADT 51” in an area of 15 ha in Thanjavur, Thiruvarur and Nagapattinam districts during first season (Kharif/Kuruvai). The performance of the new ADT 53 variety across the FLDs was impressive as against the popular short duration rice varieties ADT 43 and CO 51. The yield potential, grain quality and pest and disease free performance of ADT 53 attracted the neighboring farmers and they are convinced with the performance of this variety. Through FLD, yield advantage of more than 50 per cent over the district average and more than 12 per cent over the popular varieties was demonstrated. The farmers’ satisfaction is reflected in terms of increased demand for ADT 53 and the nodal centre sold nearly 210 quintals of seeds to the farmers by sale up to February 2020. Farmers mainly preferred for the yield, lodging tendency, quality and marketability.

To popularize long duration rice variety ADT 51 another set of 15 FLDs were conducted by TNRRRI, Aduthurai during the Samba season and farmers were selected from the four Cauvery delta districts viz., Ariyalur, Thanjavur, Thiruvarur and Nagapattinam districts. During 2019-20 North West monsoon was good and in the districts where FLDs were conducted the rainfall was wide spread throughout the cropping period from August to January. In addition to favorable monsoon, the continuous water flow in the Cauvery river also favored paddy cultivation in these districts. Compared to CR 1009 the new variety ADT 51 recorded more than 10.0 per cent yield. Besides yield the participating farmers were very much satisfied with the new variety as it gives higher yield with fewer inputs and crop protection chemicals. Farmers also expressed that this variety is free from pest and diseases when compared to CR 1009. Due to continuous demonstration of this variety for the past two years through NFSM FLD Programme, this variety is gaining momentum among the farmers in these districts and demand for the seeds has increased over the years.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	ADT 51	15	CR 1009	Ariyalur, Thanjavur, Thiruvarur, Nagapattinam	6.42	5.82	10.31
2.	ADT 53	15	ADT 43 and CO 51	Thanjavur, Thiruvarur, Nagapattinam	6.09	5.46	11.54

Frontline Demonstration on Rice (2019-20)

3.	IPDM with ADT 51	10	Farmers Practices	Nannilam block of Thiruvarur and Nagapattinam districts	5.97	4.12	44.90
4.	TKM 13	10	BPT 5204	Thiruvallur	5.61	4.95	13.33
5.	CO 52	30	Improved White Ponni, TKM 13, CO (R) 50, CO 43, ADT (R) 46, BPT 5204	Trichy, Dindigul, Villupuram and Theni	6.60	5.69	15.99
6.	Improved Samba Mahsuri	3	BPT 5204	Lalgudi	4.03	3.5	15.14
7.	DRR Dhan 44	2	BPT 5204	Lalgudi	3.96	3.5	13.14

TNRRI Aduthurai conducted Front Line Demonstration on “IPDM technologies for rice pests in ADT 51” at 10 farmer’s field in Kutthallam Block of Nagapattinam district and Nanillam Block of Thiruvarur district with the following package of practices.

Stage	IPDM	Farmer’s practices
Nursery	Seed treatment with Carbandezim @ 2 g for kg seed. Soaking of these treated seed overnight in 10 liter water and keeping in gunny bag for germination. Application of Carbofuran @ 1.1 kg a.i./ ha, 5 days before pulling seedlings from nursery for transplantation.	As per the local farmers practice.
Main field	<ul style="list-style-type: none"> • Transplanting the seedlings at a spacing of 20 x 15 cm. Leaving alleyways of 30 cm after every 2 m or 10 rows. Fertilizers applied as per local recommended fertilizer dose. Application of Butachlor 1.5 kg a.i./ ha within one week after transplanting the crop. At 15 DAT, install pheromone traps with 5 mg lure @ 8 traps/ha for stem borer monitoring. 	As per the local Farmers practice
30 – 59 DAT	Depending on weed intensity post emergence herbicide will be sprayed. Bund area if sheath blight is observed on weeds, spray will be done. N top dressing will be taken up as given in protocol using Leaf Color Chart Mid season drainage.	As per the local farmers practice
60 – 90 DAT	One spray of Cartap hydrochloride 50 WP @ 600 g /ha at 60 DAT (against stem borer/leaf folder, if incidence crosses ET value).	As per the local farmers practice

	Need based application of Propiconazole. Mid season drainage will be followed in case of BPH incidence.
> 90 DAT up to harvest	5 X 5 m ² area will be marked and yield, at 5 places (5 repl.) in this block st involved for each practice/ operation taken in IPM starting from nursery to harvest has been estimated

The newly released long duration rice variety ADT 51 with above mentioned IPM package of practices were adopted to control major pests of Rice. Gall midge Damage ranged from 16.58 % (Pillayarpaty, Thanjavur) to 85.64 (Melanambankurichi, Muthupettai block, Thiruvarur) with order of severity as Thiruvarur > Thanjavur > Pudukottai > Nagapattinam districts in 3rd week of December, 2019 was noticed. Early sowing with CR1009 – escaped the attack; Late sowing of CR1009, ADT39, BPT 5204, NLR 34449, MTU 7029 resulted in severe incidence. Continuous cloudy or rainy weather, Use of high tillering varieties, Intensive management practices (high nitrogen and indiscriminate use of combination insecticides) and low incidence of parasitoid *Platygaster oryzae* resulted this pest outbreak. Moderate to severe (5.5 to 15.5 nos. /tiller) Brown Planthopper reported from Thanjavur, Nagapattinam and Tiruvarur district at 4th week of December, 2019. Excessive application of nitrogenous fertilizers and continuous water stagnation lead to BPH outbreak. Green leaf hopper damage ranged from 5.00 (Edamandal) to 15.00 % (Vettangudi) noticed in the Nagapattinam district. Late planting and susceptible variety (White Ponni) and continuous cloudy or rainy weather and water logged for many days was the reason behind the outbreak. The performance of IPM practices were assessed and compared with the non IPM framers practices field and the findings are presented below.

Incidence of pest in IPM and Non-IPM field –2019-20

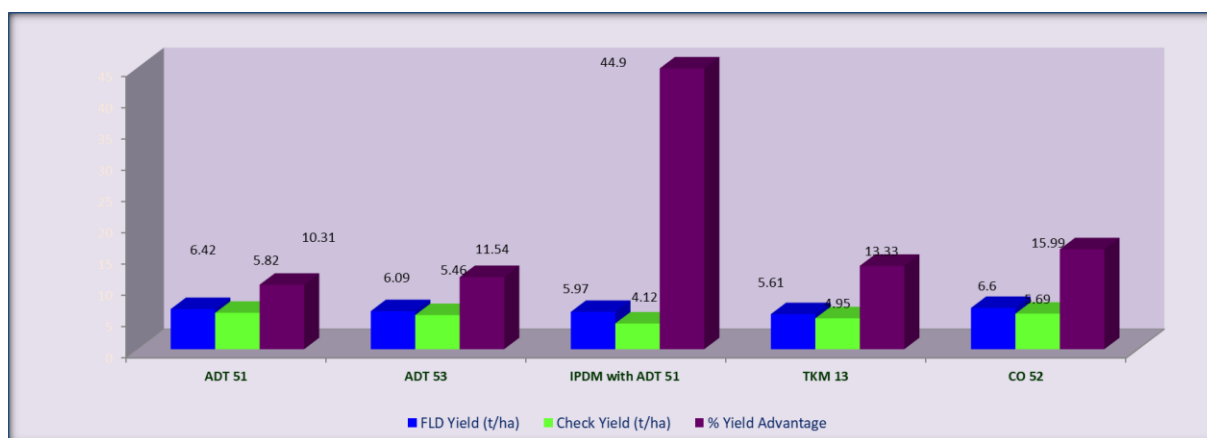
Pests / damage*	Tillering stage		Max. tillering stage		Panicle initiation		Maturity stage	
	IPM	Farmer Practice	IPM	Farmer Practice	IPM	Farmer Practice	IPM	Farmer Practice
Dead heart/ white ear (%)	6.0	9.4	7.5	15.3	8.0	17.5	8.1	19.8
Silver shoot due to gall midge (%)	5.0	9.0	9.0	15.0	10.0	20.0	-	-
Leaf folder (%)	3.0	7.1	5.6	15.3	7.9	16.7	8.8	18.3
BPH & WBPH (no./hill)	0.8	2.0	5.0	10.8	10.5	15.5	11.0	25.3
GLH (no./hill)	0.9	1.5	3.0	7.0	5.0	10.0	6.1	15.0
Spider (no./hill)	0.5	0.1	0.7	0.3	2.0	0.3	2.2	0.3
Coccinellids (No./hill)	0.7	0.4	2.0	1.0	3.3	1.1	4.5	1.0
Parasitization (%) in stem borer eggmass	20	5	25	9	31	9	45	11
Parasitisation <i>Platygaster oryzae</i> (%)	55	13	62	10	65	8	70	15

Economics of crop cultivation in IPM and Non-IPM (Farmers practice) field

Items	IPM *	Farmers practice
Field Preparation (Rs./ha)	16800	16800
Fertilizer application (Rs./ha)	6700	6700
Insecticide/Bio pesticide application (Rs./ha)	2050	4250
Other protection costs, if any (Rs./ha)	2200	1760
Crop cut operation costs (Rs./ha)	7200	8150
Any other costs (irrigation, seed cost)	3400	3400
Total cost (Rs/ha)	38350	41060
Yield (kg/ha)	5975	4125
Gross income (Rs/ha)	107550	74250
Net income (Rs/ha)	69200	33190
C: B ratio	1:2.80	1:1.81
Plant protection cost	4250	6010

*Average of 10 locations

The dead heart and white ear damage (6.00 – 8.10 %) by stem borer was low in IPM plot as against non-IPM plot, 9.40 – 19.80 % respectively. Due to the outbreak of gall midge in farmers practice non IPM plot, 9.0 – 20.0 % silver shoot as against 5.0- 10.0 % in IPM plot were noticed. The economic damage of Bph and WBph was low in IPM plot (0.8-11.0 no./hill) as against Non-IPM plot (2.0 – 25.3 no./hill) the same trend was observed in Leaf folder incidence (3.0 - 8.0 % in IPM as against 7.1 - 18.3 %). However, the population of natural enemies viz., coccinellids (0.7-4.5 no/hill) and spiders (0.5-2.2 no/hill) in IPM plot was more when compared to non-IPM plot (0.4- 1.0 & 0.1-0.3). Gall midge parasitoid *Platygaster oryzae*, parasitization also more in IPM plot (55-70 %) compared to Non IPM (13-15%). Higher yield of 5.98 t/ha was obtained from IPM plot as compared to non-IPM plot (4.13 t/ha). The net income per hectare from IPM plot was high, Rs. 69200 as compared to Non-IPM plot (Rs. 33190).

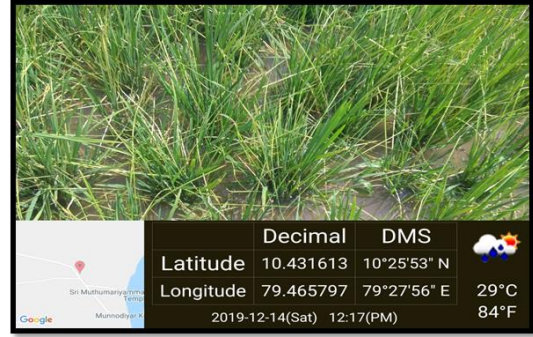


Frontline Demonstration on Rice (2019-20)



Komal, Kutthalam Block, Nagapattinam District

BPH infested field



Melanambankurichi, Muthupettai block, Thiruvarur

Gall midge affected field



Vettangudi, Kollidam Block, Nagapattinam District

GLH infested field



Inputs distribution



Field day conducted at Komal village on 01.02.2019



Field day

Rice Research Station, Tirur organized 10 FLDs to popularize the recently released variety Rice TKM 13 in Thiruvallur district. The overall crop performance of the cropping season 2019-20 was good. In many places incidence of pests and diseases was very less compared to the check variety BPT 5204 and in some places no incidence of pests and diseases was noticed in Rice TKM 13 fields. With average grain yield of 5.61t/ha, TKM 13 displayed about 13.6 per cent increased yield over the check variety.

Rice TKM 13 – released by Central variety Release Committee during 2017 for Gujarat and Maharashtra.

Parentage – WGL 32100 / Swarna

Season : August-September sowing in Tamil Nadu.

Duration : 130 days

Average yield : 5938 kg/ha

Salient Features

- ❖ Semi-dwarf, erect, high tillering and non lodging plant habit.
- ❖ Moderately resistant to leaf folder, stem borer and GLH.
- ❖ Moderately resistant to blast, RTD, brown spot and sheath rot.
- ❖ Medium slender white rice with 1000 grain weight of 13.8 g, lesser than all medium duration rice varieties.
- ❖ High milling yield (75.5%) and head rice yield (71.7%), which is on par with the check variety BPT 5204.
- ❖ High Linear Elongation Ratio (1.72) and less Breadthwise Expansion Ratio (1.25).

During 2019-20, Department of Rice, TNAU, Coimbatore conducted 30 demonstrations with Rice CO 52 in four districts namely Trichy (23 locations in five blocks), Dindigul (17 locations), Villupuram (9 locations in two blocks) and Theni (1 location). The demonstrated technology that was released during the year 2016 by SVRC is of medium duration (130–135 days), medium tall rice variety with mean grain yield of 6.19 t/ha, with resistance to blast, moderately resistant to plant hoppers and leaf hopper, sheath rot, brown spot and sheath blight and suitable for *late samba /thaladi season* in Tamil Nadu. In the demonstrated areas, all the farmers recorded higher yield than the check variety (Improved White Ponni, TKM 13, CO (R) 50, CO 43, ADT (R) 46, BPT 5204) with an average yield of 6.60 t/ha with 15.91% yield advantage.

IIRR also conducted five demonstrations on DRR Dhan 44 and Improved Samba Mahsuri and STRVs in collaboration with the Malaikottai Paddy Farmers Producer Company Limited (MPFPCL), Lalgudi –Tiruchirappalli District. Farmers were satisfied with the performance of demonstrated varietal technologies.

Telangana

Rice is mainly grown under irrigated conditions in the command areas and also in rainfed conditions during kharif season. Southern Telangana grows medium duration varieties while Northern Telangana grows mainly the short duration varieties.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Integrated Weed Management	10	Local practices	Kamareddy	5.79	5.09	13.75
2.	CGZR 2	5	BPT 5204	Mahabubnagar	4.88	3.50	39.43
3.	Protozin			Mahabubnagar	4.70	3.50	34.29
4.	Zincorice			Mahabubnagar	3.74	3.50	6.86
5.	Mechanized transplanting	10	Manual transplanting	Thudukurthy, Nandiwaddeman, Yendabetla, Nallavelli, Khanapur villages of Nagarkurnool and Kothathanda village of Mahabubnagar	6.72	6.50	3.3
6.	AWD in rice	5	Field submergence	Peedshapur, Burjugadda tanda	6.13	5.91	3.7
7.	Chemical weed management	5	Hand weeding	Peedshapur Burjugadda tanda	6.2	6.0	3.3
8.	Integrated Crop Management + JGL – 24423	10	MTU 1010	Karimnagar	7.03	6.88	2.18
9.	IPM + BRRI 75	10	MTU 1010	Karimnagar	7.01	6.85	2.34
10.	Direct sown rice through Drum seeder + BINA - 17	10	Conventional practices + KNM 118	Karimnagar	7.00	6.80	2.94
11.	RNR 15048	5	BPT 5204	Agamothukur and Gurrappagudem	6.53	5.83	12.01
12.	BRRI 75	5	BPT 5204	Agamothukur and	6.30	5.77	9.19

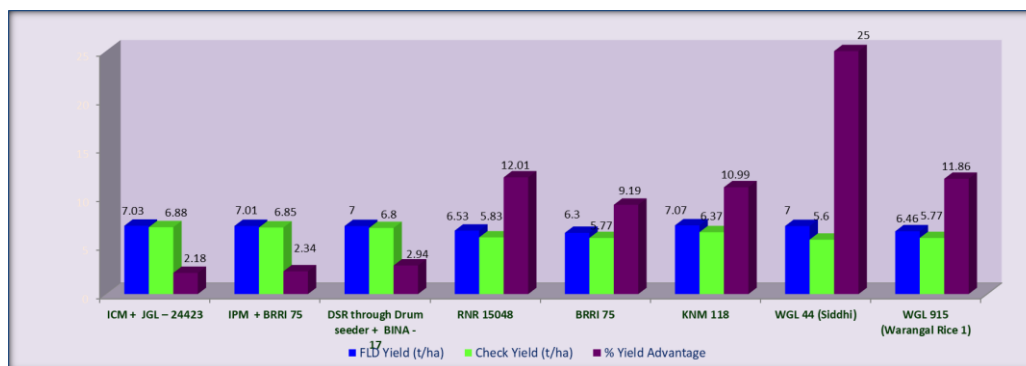
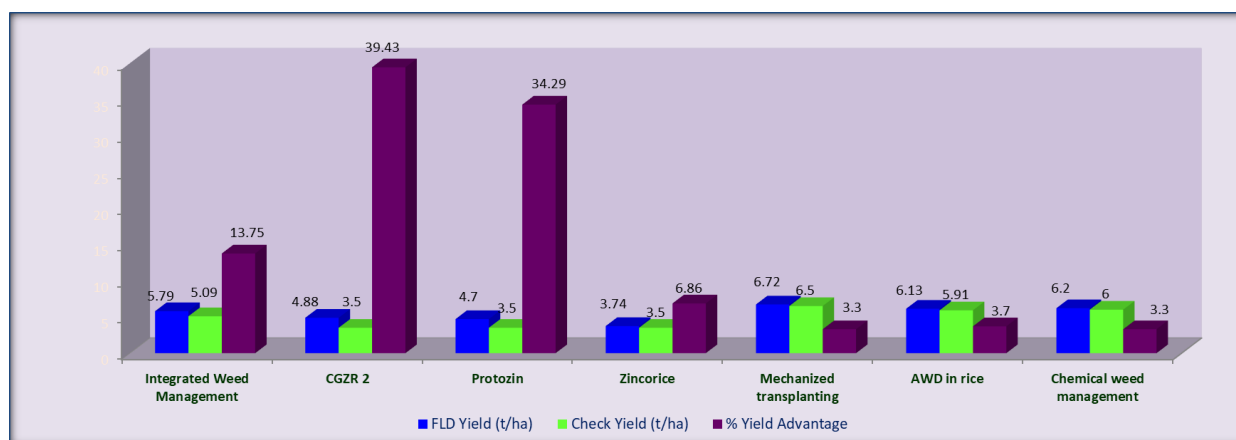
Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
				Gurrappagudem			
13.	KNM 118	5	BPT 5204	Agamothukur and Gurrappagudem	7.07	6.37	10.99
14.	WGL 44 (Siddhi)	10	BPT -5204	Paidipally Nagaram village of Parkal mandal, Warangal Rural district, Telangana	7.0	5.60	25
15.	WGL 915 (Warangal Rice 1)	4	MTU 1001	Kanaparthi village, Regonda mandal of Jayashankar Bhupalpally district, Telangana	6.46	5.77	11.86
16.	Problem soil management	10	Local practices	Chandepally village, Motakondur mandal of Yadadri district	6.75	4.92	37.20

Indian Institute of Rice Research organised FLDs on various varieties, management practices across Telangana state.

Integrated Weed Management and new high yielding IRR Variety DRR Dhan 46

Integrated Weed Management (IWM) was implemented through Dept. of Agriculture, Kamareddy District, Telangana in the farmers field plots of Banapur, Lingapur, Yellareddy, Aurangabad and Narsannapalle, using IRR High Yielding Variety. and seed rate of 50 kg/ha for robust nursery instead of prevailing practice of high seed rate(70 kg/ha); the pre-sowing herbicide application of Glyphosate 15 Days Before Planting; Application of Oxadiargyl at 7 Days After Planting (DAT) followed by Chlorimuronethyl + metsulfuronmethyl at 25 DAT in some fields; application of Penoxsulam at 12-15 DAT in some fields depending on the weed flora and intensity; top dressing of nitrogen based on leaf color chart of IRR, Hyderabad (saving of 25-30 kg nitrogen); need based application of plant protection chemicals instead of blanket application; water proof tarpaulin for protecting quality of harvested paddy. By implementing the above mentioned management technologies the farmers achieved monetary benefit mainly by reducing the input cost which has reflected in higher yields. Adoption of new IRR variety and Integrated Weed Management helped the farmers to achieve the grain yield advantage of 4.35 to 29.41%, resulted in monetary advantage of 55%.



Popularisation of Biofortified varieties

IIRR conducted demonstrations on biofortified varieties in 5 hectares in collaboration with YFA-Krishi Vigyan Kendra Madanapuram. CGZR 2 is a SVRC variety with zinc content of 25.0 ppm, Zinco Rice with 27.4 ppm of Zinc content and Protezin with 20.9 ppm of Zinc and 9.5% of protein were demonstrated.

Popularisation of high yielding varieties

IIRR in collaboration with KVK Kampasagar conducted 15 FLDs on RNR 15048, BRRI 75 and KNM 118 demonstrated high yielding ability of these varieties in Agamothukur and Gurrappagudem villages of Nalgonda District.

Also, along with KVK Jammikunta IIRR conducted 30 FLDs on Integrated Crop Management, IPM and DSR with latest high yielding varieties like JGL – 24423, BRRI 75 and BINA - 17 in Karimnagar district.

Problem soil management

FLDs on sodic soils (soils with high pH of around 8.6-9.1) management were taken up in 10 farmers fields covering an area of 10 hectares in Chandepalle village, Motakondur mandal, Yadadri District during kharif 2019. Initially the farmers were advised to incorporate paddy straw in their fields during summer. As per the initial soil analysis, fertiliser doses were calculated and suggested to the farmers and were advised to apply as per the given recommendation. Zinc deficiency is very common in sodic soils and they respond well to organics also. Hence, along with vermi compost, critical inputs like chelated zinc were distributed to farmers. Due to delayed onset of monsoon, transplanting was delayed. Vermi-compost @ 600 kg/ha was applied two times; half as basal and another half as top dressing at tillering stage. The yield was estimated and the yield advantage of our interventions with straw, chelated zinc and vermi-compost improved rice yields to an extent of 30.7 to 46.1% over check plots.

Rice Research Centre, ARI, Rajendranagar of PJTSAU conducted total 20 Front line demonstrations in 20 ha. Farmer were provided with latest released varieties like RNR 15048, KNM 118, Machine transplanting hiring charges other inputs like AWD pipe, herbicides and granules for pest control etc. Out Of 20 FLDs 10 were conducted on machine transplanting, 5 FLDs on Chemical weed management and on alternate wetting and drying in rice. The results of twenty Frontline Demonstrations conducted in 20.0 ha through in Nagarkurnool and Ranga Reddy districts indicated that the machine transplanting gave an additional grain yield (3.4 %) of around 220 kg ha⁻¹ and additional net returns of around Rs 9272/- per ha over manual random transplanting with a saving of Rs. 5100 ha⁻¹ in cost of cultivation. Farmers feedback on the machine transplanting was that, timely transplanting can be done with machine during peak period of labour shortage, pest and diseases were less to machine planted crop due to wider spacing and yield recorded was higher over conventional manual planting.

Five frontline demonstrations conducted on chemical weed management recorded an additional grain yield of 3.7 % around 200 kg/ha with additional net returns of 8000/ha and reduced cost of cultivation of Rs 3900/ha over conventional hand weeding. The demonstrations on Alternate wetting and drying in rice conducted in Ranga Reddy district indicated that the on an average 6-8 irrigations were decreased by the farmers using this technology. Farmers reported that this technology is farmer friendly and eco friendly in saving water resources.

Regional Agricultural Research Station, Warangal conducted Frontline Demonstrations under National Food Security Mission on Rice variety Siddhi (WGL-44) during *kharif*, 2019 in 10 hectares in the farmers fields of Paidipally Nagaram village, Parkal mandal of Warangal rural District. The performance of the demonstrated rice variety Siddhi (WGL-44) was superior compared to the check variety BPT 5204. The variety WGL-44 recorded an average yield of 7.00 t/ha with an yield advantage of 25% over local check variety BPT 5204 (5.60 t/ha).

RARS, Warangal also organized 10 FLDs on Warangal Rice-1 (WGL-915) which is a newly released variety in 4 hectares in the farmer fields of Kaniparthi village, Regonda mandal of Jayashankar Bhupalpally district. Across the locations WGL-915 recorded an yield of 6.46 t/ha

with 11.86% yield advantage over local check MTU 1001 (5.77 t/ha). Farmers were happy and expressed satisfaction over performance of demonstrated variety WGL-915 showing high yield, non lodging and lengthy panicle with bold grain type.

The FLD yields are far higher than state average (3.45 t/ha) and districts average (3.34 t/ha & 3.65 t/ha). Farmers were impressed with these varieties which fetched good price in the market due to its good grain quality characters and lesser pest and disease incidence. In terms of cost of cultivation it saved Rs.5000/ha as compared to local check varieties.



Field day on Machine transplanting on 22.08.2019 at Nagarkurnool district



Input distribution FLD beneficiaries and field data recording in FLD plot



FLD on chemical weed management and AWD in Rice
Farmer Scientist Interaction conducted on FLDs

SIDDHI (WGL-44)



SALIENT FEATURES

Duration : 140-145 days
Plant height : 105-110 cm
Grain type : Medium slender
Grain yield : 6.0-7.0 t/ha

Special features:

- It matures week days early to BPT-5204,
- Gall midge resistant, non lodging and non shattering culture with good cooking quality.
- It is fetching equal price in the market to that of BPT-5204.

WARANGAL RICE (WGL-915)



WGL-915

SALIENT FEATURES

Duration : 135 days (Medium)
Plant height : 125-130 cm
Grain type : Long Bold
Grain yield : 7.5-8.0 t/ha

Special features:

- Moderately tolerant to brown plant hopper, bacterial leaf blight, blast and tungro virus
- Suitable for drum seeding/direct seeding
- Suitable for making of poha and puffed rice
- Less shattering and non lodging

Frontline Demonstration on Rice (2019-20)



Seed distribution to FLD beneficiaries on 04-07-2019



FLD visit at vegetative stage



Input distribution to FLD beneficiaries



Dr.Shaik N Meera, Principal Scientist & Coordinator, FLDs on Rice, IIRR, Hyderabad addressing beneficiaries



Field day (WGL 915) on 29-11-2019

ఆంధ్రజ్యోతి 7/18

డబ్ల్యూజీఎల్-915తో అధిక దిగుబడులు

ప్రాంతీయ పరిశోధనా కేంద్రం సహపరిశోధన సంచాలకుడు జగన్మోహన్ రావు

క్షేత్ర సందర్శన చేస్తున్న వ్యవసాయాధికారులు, ఎంపీ లక్ష్మి

రేగండ్, నవంబరు 29: వనంగల్ వ్యవసాయ పరిశోధన కేంద్రం వారు ఆవిష్కరించిన కొత్త వంగడు డబ్ల్యూజీఎల్-915తో అత్యధిక దిగుబడులు సాధిస్తున్నారని వనంగల్ ప్రాంతీయ పరిశోధనా కేంద్రం సహపరిశోధన సంచాలకుడు డాక్టర్ ఎజగన్మోహన్ రావు అన్నారు. మండలం లోని టిఎస్సీ గ్రామంలో వ్యవసాయాధికారులు కొందరు క్షేత్రం వారి వంగడు అందింది 10 ఎకరాల్లో సాగు చేయడానికి ప్రోత్సహించారు. పంట కోతకు రావడంతో క్షేత్రం ఆధిపత్యం తెలుసుకోవడానికి, క్షేత్ర వెళ్లడం చేయడానికి ముఖ్య అతిథిగా జగన్మోహన్ రావు వచ్చారు. ఈ సందర్భంగా మాట్లాడుతూ ఈ పంట మన ప్రాంతంలో అనుష్ఠించిన రెండు, గాలును పొడవుగా, పంట పడిపోకుండా ఉన్నట్లు గమనించామన్నారు. అలాగే 40 నుంచి 45 బస్తాలు దిగుబడి వచ్చిందని క్షేత్రం తెలిపారని చెప్పారు. ఇది వరకూ అంటి, టిఎస్ఎస్ అనుబంధంగా, 130 కోలాల్లో పంట వెలు అని అన్నారు. ఎంపీ పువ్వు లక్ష్మయ్య మాట్లాడుతూ క్షేత్రం ఈ కొత్త వంగడు సాగుపై దృష్టి పెట్టాలని, ఈ అవకాశాన్ని సద్వినియోగం చేసుకొని కార్యవేత్తల సంఘం, వ్యవసాయాధికారులు సహజం పంటల సాగులో పాటించాలని కోరారు. కార్యక్రమంలో కార్యవేత్త డాక్టర్ మాంటి, జ్ఞానమిప్ప డాక్టర్ నాగభూషణం, ఏనువాక కోట్లసీట్ శ్రీనివాస్, వరి కార్యవేత్తలు సతీష్ చంద్ర, విజయ, సర్పంచ్ సుధాకర్, ఎంపీటీసీ సుబ్బారాజు, నాగుల్లపల్లి సర్పంచ్ తిరుపతి, మండల వ్యవసాయాధికారి వాసుదేవరెడ్డి, ఏఈబీలు సునీల్, ప్రకాష్, గోపర్ణ, రమ్య, దీక్షిపతి, అతిథి తదితరులు పాల్గొన్నారు.

వెలుగు 12/15

సాగులో మార్పు రావాలి

పదీలర్ జగన్మోహన్ రావు

సాగులో మార్పు రావాలి. లాభదాయకమైన వ్యవసాయంపై ప్రైవేటు రుణ్ణి సాగించాలని సూచించారు. ఎకరం వరి సాగుకు 1200 మిల్లీమీటర్ల నీటి వినియోగం అవసరం ఉంటుందని తెలిపారు. నీటిని సంరక్షించి తరచుగా నీటిని తిరిగి ఉపయోగించాలని సూచించారు. వనంగల్ జగన్మోహన్ రావు మాట్లాడుతూ ప్రతి ఎకరానికి 1001 వరి సెరైడిక్ ప్రత్యామ్నంగా వనంగల్ 915 రకంపై క్షేత్రం వనరులను ప్రతి ఒక్కరూ సద్వినియోగం చేసుకోవాలని తెలిపారు. కార్యవేత్తలు ఎస్. మాంటి, డాక్టర్ నాగభూషణం, ఏనువాక కోట్ల సీట్ శ్రీనివాస్, ఏఈ బి. వెల్లి వెళ్లినవేరెడ్డి, ఎంపీ పువ్వు లక్ష్మయ్య, సర్పంచ్ బాబు సుధాకర్ తదితరులు పాల్గొన్నారు.

వరి క్షేత్ర సందర్శన చేస్తున్న వ్యవసాయ కార్యవేత్తలు, క్షేత్రం

**ANNEXURE-I
DETAILED INFORMATION OF INDIVIDUAL FRONT LINE DEMONSTRATION (FLD)**

Details of beneficiaries of FLDs during **Kharif, 2019**

- (1) Name & complete address of the implementing Centre : Professor Jayashankar Telangana State Agricultural University (PJTSAU)
Regional Agricultural Research station,
Mulugu Road, Warangal-506007
- (2) Website e mail ID : adrrars_wgl@yahoo.co.in
chandragene@gmail.com
- (3) Fax No. : 0870-2975223
- (4) Name of Crop : Rice
- (5) Name of Variety/hybrid : Warangal Rice-1 (WGL-915)
- (6) Location : Regonda Mandal
- (7) District : Jayashankar Bhupalpally
- (8) State : Telangana

S. No.	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	Follow visit of Scientist
				Seed		Biopesticides		Weedicides		Pesticides				
				Quantity	Value (Rs.)	Quantity	Value (Rs.)	Quantity	Value (Rs.)	Quantity	Value (Rs.)			
1.	Nadipelli Sampath Rao S/o Pullaiah Kanaparthi village, Regonda mandal of Jayashankar Bhupalpally district, T.S. Ph no.9573510324	Gen. & Male	0.4	25 Kg	950/-	<i>Pseudomonas fluorescens</i> (300 g)	45/-	Oxadiazyl (Topstar) (1packet of 35 g)	315/-	Carbofuran 3G granules (2 packets of 5kg each)	1158/-	High yielding Newly released Variety: Warangal Rice-1 (WGL-915)	29.11.2019	28.08.2019
									Acephate (300 g)	180/-			31.08.2019	
									Isoprothiolan e (300 ml)	300/-				29.10.2019
									Propiconazole (200 ml)	292/-				29.11.2019

Signature of beneficiary



Signature with seal
Scientist In charge Implementing centre



Signature with Seal
Director/Project Director

ANNEXURE - V
FINAL REPORT ON FRONTLINE DEMONSTRATION

1.	Crop	Paddy
2.	Season	Kharif
3.	Technology being demonstrated	Integrated pest management(BRRI 75)
	Specific advantages or features of new technology being demonstrated as compared to the farmers' present practice in the area (Give details)	Pheramone traps and Neem oil, bio fungicides ,cartap hydrochloride ,IPM Practice is efficiently used.
4.	Location (with full address)	Village : Kareempet Taluka: Shankerpatnam District: Karimnagar State: Telangana
5.	Category of beneficiary farmers: d. Name with Father's /Husband Name : e. Medium/Small/Marginal/Women : f. SC/ST/General	Kethari Madhusudhan MARGINAL FARMER General
6.	Area under demonstration (ha)	01 ha
7.	Ecosystem (Irrigated/rainfed/shallow lowland/rainfed upland etc. Give details)	Irrigated with open well
8.	Field Condition (d) Topography (e) Soil Type (f) Native nutrient status Any other information about field condition	Red sandy soil

9. Production Technology Adopted		
Particulars	FLD Plot	Check – Farmers' practice Plot
(ii) Variety/Hybrid	BRRI 75	MTU 1010
(ii) Seed rate	25 Kg	20Kg
(iii) Source of Seed	KVK, JMKT	FPO
(iv) Seed treatment	Bavistin	Carbendzim
(v) Sowing date	26-06-2019	24-06-2019
(vi) Nursery details seeding density in nursery etc.	Raised bed system	Raised bed system
(vii) Transplanting date	20-07-2019	20-07-2019
(viii) Spacing	25X15cm	25x15cm
(ix) Plant population		

Frontline Demonstration on Rice (2019-20)

maintained per ha.		
(x) FYM/compost applied	4tonnes/acre	3tonnes/acre
(xi) Fertilizers applied (c) Basal (NPK kgs/ha) (d) Top dressing : Number of times & stage (NPK kg/ha)	DAP- 1bag/ac UREA-2bags,3times/ac MOP-,1bag1time,/ac	DAP- 1bag/ac UREA-3bags,3times/ac MOP-,1bag1time,/ac
(xii) Micro-nutrient used if any (name/quantity)	-	-
(xiii) Weed control (b) Herbicides used (name/quantity) Inter-culture operations (Number)	Pretilachlor 400ml/acre	TOPSTAR 30gm /Acre
(xiv) No. of irrigation given (crop stage-wise)	15-18 irrigations	16-18 irrigations

10. Plant protection measures adopted		
Particulars	FLD Plot	Check Farmers' practice plot
(a) Insect pest	Stem borer	Stem borer
(i) Name of the pest observed		
(ii) Extent of damage (%)		
(iii) Name of the insecticide used	Carbofurran 3G @10 kg/acre	Acephate 1.5 gr/lit
(iv) Quantity (kg/litre) used	1lit	1/2lt
(v) Frequency of application		
(vi) Is this a major pest in the area?	yes	Yes
(b) Diseases observed	False smut	Sheath blight
(i) Name of the disease		
(ii) Extent of damage (%)	-	-
(iii) Name of the pesticide used	Carbendazim	Tilt 1 grlit
(iv) Quality (kg/litre) used	-	-
(v) Frequency of application	-	-
(vi) Is this a major or common disease in the area.	Common	common
(c) Biological control adopted, if any.	-	-

Particulars	FLD Plot	Check Farmers' practice plot
11. Date of harvesting	12.11.2019	13.11.2019
12. Method adopted for estimate of yield (crop cutting, sampling method)	Crop cutting	Crop cutting

Frontline Demonstration on Rice (2019-20)

etc. Give details)		
13. Name of person from organizers present at the plot at the time of estimate of yield to record it accurately.	D.SRINIVAS REDDY,SCIENTIST J.VIJAY,SCIENTIST E. RAMESH & FARMERS	
14. Estimate of yield (a) Grain (b) Straw	70.3Q/ha 36Q/ha	68.8q/ha 35.2q/ha
15. Gross Income (ha) (a) Value of grain (Rs.) (b) Value of straw (Rs.)	Rs 127594.5/- Rs 1100/-	Rs 124872- Rs 950/-
16. Cost of cultivation (ha), Give some major items of expenditure.	Rs 39,000/- Puddling, Transplanting and Harvesting	Rs 42,000/- Puddling, Transplanting and Harvesting

17.	Net profit to the farmer by adopting the technology (Rs/ha.)	Rs 7150/-
18.	Farmers Reactions (In details)	Farmers feel happy with this low cost of cultivation and low cost of irrigation
19.	Reaction of neighbouring farmers	Neighbouring farmers also Intersted on this low cost of cultivation.
20.	Number of visits made to the plot with dates and observations made in each trip.	5 Times visited

Uttar Pradesh

Rice is grown in all the 72 districts of Uttar Pradesh with low to high acreage. It is part of the nearly every meal and it is grown on a majority of the rural farms. Uttar Pradesh is the leading producer of rice and rank 3rd in the country. In Uttar Pradesh rice is cultivated in an area of 59.47 lakh ha with a productivity of 2.358 t/ha and the annual rice production is 140.22 lakh tons.

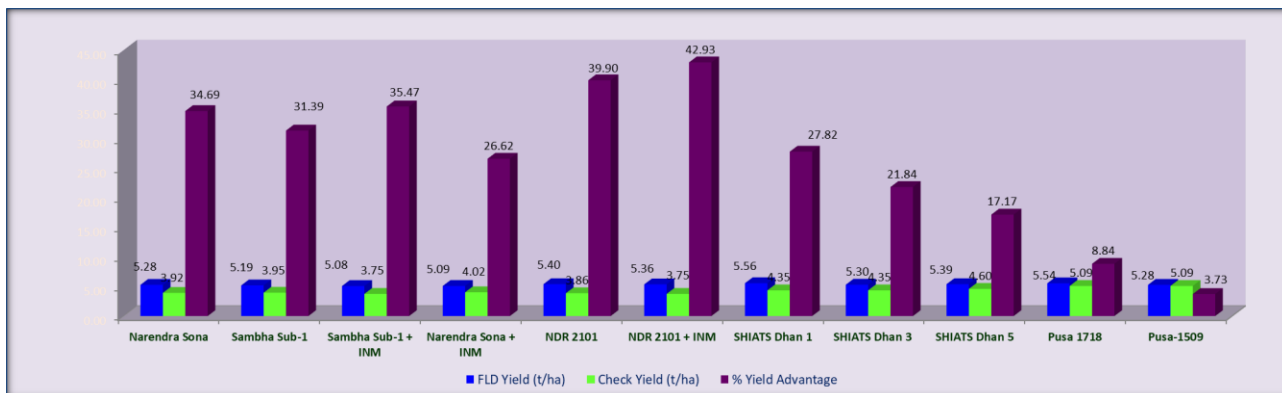
Rice is cultivated mainly in Kharif season (wet season) in around 5.90 million hectare followed by zaid (summer season) 40,000 hectare only. As regards the boro rice, it is grown in only deeply flooded areas around 3000 ha or so mainly in the eastern districts of the Uttar Pradesh. The average productivity of the state is around 2 t/ha.

Crop Research Station, Masodha conducted 25 demonstrations in different blocks of Ayodhya, Gonda and Azamgarh on Narendra Sona, Sambha Sub- 1, NDR 2101 along with INM. The varietal demonstration of Narendra Sona and NDR 2101 gave a yield advantage of nearly 35% and 40% where as it was more when combined with INM practices in case of NDR 2101 (43%).

Department of Genetics and Plant Breeding, Sir Higinbothom Institute of Agriculture, Science and Technology (SHIAT) has conducted 10 FLDs each on SHIATS DHAN -1, SHIATS DHAN 3, and SHIATS DHAN 5 in Prayagraj district.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Narendra Sona	10.4	NDR 359	Gonda, Ayodhya	5.28	3.92	34.69
2.	Sambha Sub-1	3.2	BPT 5205, NDR 359, Sarjoo 52	Azamgarh, Ayodhya, Gonda	5.19	3.95	31.39
3.	Sambha Sub-1 + INM	3.6	Jal Lahri, NDR 359, BPT 5204	Ayodhya	5.08	3.75	35.47
4.	Narendra Sona + INM	2	BPT 5204, NDR 359, Sarjoo 52	Ayodhya	5.09	4.02	26.62
5.	NDR 2101	4.2	Sambha Mahsuri, NDR 359	Ayodhya, Palpura	5.4	3.86	39.90
6.	NDR 2101 + INM	1.6	NDR 359	Ayodhya, Palpura	5.36	3.75	42.93
7.	SHIATS Dhan 1	3	NDR 359 Sonam	Prayagraj	5.56	4.35	27.82
8.	SHIATS Dhan 3	3	NDR 359 Sonam	Prayagraj	5.30	4.35	21.84
9.	SHIATS Dhan 5	4	NDR 359 Sonam	Prayagraj	5.39	4.60	17.17
10	Pusa 1718	3	Pusa 1121	Gautam Budh Nagar	5.54	5.09	8.84
11	Pusa-1509	3	Pusa 1121	Gautam Budh Nagar	5.28	5.09	3.73

Frontline Demonstration on Rice (2019-20)



Amity Centre for Agricultural Extension Services (ACAES), Amity University, Noida conducted 10 FLDs in 15 farmer's field in blocks Jewar and Dadri district Gautam Budh Nagar. The scented varieties Pusa-1718 and Pusa 1509 were demonstrated and highest yield was found in Pusa-1509 i.e. 5.54 t/ha followed by Pusa 1718 i.e. 5.28 t/ha in both the villages. The farmers were satisfied with both these varieties for its higher yield and the high market price.



Frontline Demonstration on Rice (2019-20)



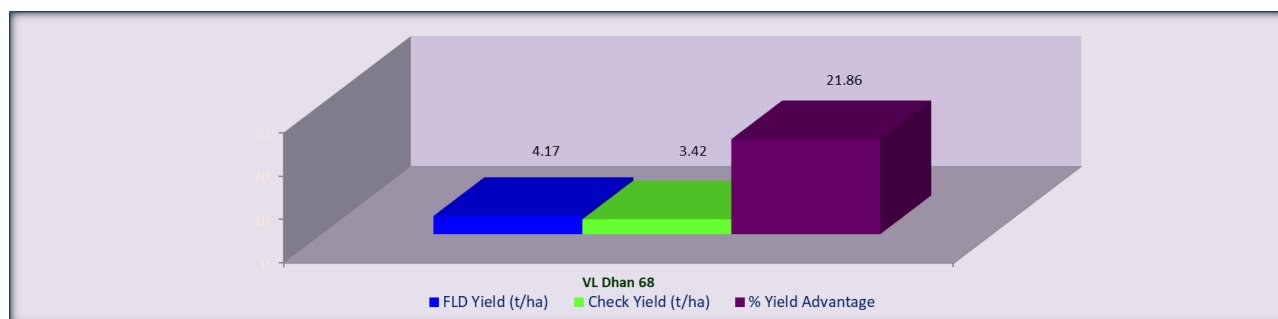
Uttarakhand

Rice is the major cereal crop of kharif season accounting for more than 54 percent of the total area under cereals in the state. In Uttarakhand rice is cultivated in an area of 2.8 lakh ha with a productivity of 2.12 t/ha the annual rice production is 5.99 lakh tons. There are two distinct rice ecosystems in the state. District Udham Singh Nagar, Hardwar and plains of Nainital and Dehradun districts grow rice under irrigated ecosystem. Rest of the nine districts viz., Almora, Bageshwar, Champawat, Pithoragarh, Chamoli, Uttarkashi, Rudraprayag, Pauri, Tehri and hill regions of districts Dehradun and Nainital are under rainfed upland ecosystem. In case of Hill ecosystems there is a need to introduce the most location specific high yielding varieties.

To realise this objective, VPKAS, Almora conducted five demonstrations on VL Dhan 68. This variety was released for the irrigated transplanted medium duration condition of the mid-hills of Uttarakhand and Meghalaya. It matures within 125-130 days and can give yield up to 4.5 tonnes per hectare under standard agronomic practices. It is also resistant to blast, the most important disease of rice in the hills. This variety was demonstrated in the five hectares in Almora district and it exhibited about 21.86% yield advantage over the local checks.

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	VL Dhan 68	5	Thapachini, China 4, Taichung	Toonakoat, Tipola, Block-Tarikhet, District-Almora	4.17	3.42	21.86





ANNEXURE

Details of the Farmers conducting FLDs during *kharif* 2019

1. Village- Toonakoat, Block- Tarikhet , District- Almora, Uttarakhand NSD/TPD/ DOH: 16-20.05.19/18-24.06.19/27-30.09.19, 01-02.10.19						
Sl No	Farmer's Name and Fathers/Husband name	Categories (SC/ST/OBC/ Gen) & Gender (Male/Female)	VL Dhan 68		Local Check (Taichung)	
			Area (ha)	Production (q)	Area (ha)	Production(q)
1.	Sri Sher Singh S/o Sri Godhan Singh	Gen/Male	0.12	40.00	0.04	30.00
2.	Sri Bache Singh S/o Sri Pratap Singh	Gen/Male	0.2	37.80	0.08	27.50
3.	Sri Jaman Singh S/o Sri Gusain Singh	Gen/Male	0.2	41.50	0.06	32.50
4.	Sri Bache Singh S/o Sri Dewan Singh	Gen/Male	0.2	41.00	0.08	33.50
5.	Sri Pan Singh S/o Sri Dhan Singh	Gen/Male	0.12	37.50	0.08	34.00
6.	Sri Gulab Singh S/o Sri Dhan Singh	Gen/Male	0.12	40.50	0.06	35.00
7.	Sri Harbansh Singh S/o Sri Bhopal Singh	Gen/Male	0.12	41.50	0.06	32.50
8.	Sri Gopal Singh S/o Sri Umed Singh	Gen/Male	0.08	42.00	0.04	31.00
9.	Sri Sunil Singh S/o Sri Dharam Singh	Gen/Male	0.2	39.00	0.08	30.00
10.	Sri Gopal Singh S/o Sri Bhawan Singh	Gen/Male	0.2	41.00	0.08	34.00
11.	Sri Bhagwat Singh S/o Sri Dhan Singh	Gen/Male	0.12	40.00	0.06	34.00
12.	Smt. Parwati Devi W/o Sri Nandan Singh	Gen/Female	0.08	40.50	0.06	32.50
13.	Sri Bhagwat Singh S/o Sri Joga Singh	Gen/Male	0.12	42.50	0.04	32.00

Frontline Demonstration on Rice (2019-20)

14.	Sri Dhan Singh S/o Sri Joga Singh	Gen/Male	0.2	43.00	0.02	33.00
15.	Sri Kharak Singh S/o Sri Gaje Singh	Gen/Male	0.12	40.50	0.04	32.50
16.	Sri Madan Singh S/o Sri Gaje Singh	Gen/Male	0.12	39.50	0.06	34.50
17.	Sri Bhim Singh S/o Sri Jaimal Singh	Gen/Male	0.12	38.50	0.08	32.50
18.	Sri Gopal Singh S/o Sri Madan Singh	Gen/Male	0.12	40.00	0.02	34.50
19.	Sri Santosh Singh S/o Sri Dalip Singh	Gen/Male	0.12	39.00	0.06	35.00
20.	Smt. Pana Devi W/o Sri Pan Singh	Gen/Female	0.12	42.00	0.04	35.50
21.	Sri Sunder Singh S/o Sri Lal Singh	Gen/Male	0.12	41.00	0.04	32.00
22.	Smt. Parwati Devi W/o Sri Narayan Singh	Gen/Female	0.2	43.50	0.04	34.00
23.	Sri Rajan Singh S/o Sri Kalu Singh	Gen/Male	0.12	42.50	0.04	32.00
24.	Sri Dewan Singh S/o Sri Umed Singh	Gen/Male	0.12	42.00	0.04	34.50
25.	Sri Dalip Singh S/o Sri Bhawan Singh	Gen/Male	0.08	45.00	0.04	32.50
	Total		3.44	40.85	1.34	32.84

2. Village- Tipola, Block- Tarikhet , District- Almora, Uttarakhand NSD/TPD/ DOH: 16-20.05.19/18-24.06.19/27-30.09.19, 02.10.19

Sl No	Farmer's Name and Fathers/Husband name	Categories (SC/ST/OBC/ Gen) & Gender (Male/Female)	IC VL Dhan 68		LC (Bauran dhan/ Ghudia Lal dhan)	
			Area (ha)	Production (q)	Area (ha)	Production (q)
1.	Sri Anand Singh Jeena S/o Sri Heera Singh	Gen/Male	0.12	42.50	0.06	33.50
2.	Sri Pan Singh S/o Sri Heera Singh	Gen/Male	0.06	40.00	0.04	36.00
3.	Sri Syam Singh S/o Sri Pratap Singh	Gen/Male	0.08	41.50	0.1	37.00
4.	Sri Ram Singh S/o Sri Pratap Singh	Gen/Male	0.12	42.00	0.04	36.50
5.	Sri Raghuvveer Singh S/o Sri Tej Singh	Gen/Male	0.06	39.50	0.04	34.50
6.	Sri Thakur Singh S/o Sri Mohan Singh	Gen/Male	0.06	39.00	0.02	36.00
7.	Sri Jwala Singh S/o Sri Nar Singh	Gen/Male	0.08	37.50	0.06	36.50

Frontline Demonstration on Rice (2019-20)

8.	Sri Ram Singh S/o Sri Nar Singh	Gen/Male	0.12	40.50	0.02	32.50
9.	Sri Pan Singh S/o Sri Kisan Singh	Gen/Male	0.08	39.50	0.06	33.00
10.	Smt. Radhika Devi W/o Sri Kishan Singh	Gen/Female	0.06	42.50	0.02	34.50
11.	Sri Puran Giri S/o Sri Bhairab Giri	OBC/Male	0.06	42.00	0.02	34.00
12.	Sri Heera Singh S/o Sri Pratap Singh	Gen/Male	0.08	39.00	0.06	35.00
13.	Sri Pratap Singh S/o Sri Jwala Singh	Gen/Male	0.06	38.50	0.08	34.50
	Total		1.04	40.31	0.62	34.88
3. Village- Rawalsera , Block- Dwarahaat , District- Almora Uttarakhand NSD/TPD/ DOH: 16.05.19/21.06.19/30.09.19						
Sl No	Farmer's Name and Fathers/Husband name	Categories (SC/ST/OBC/Gen) & Gender (Male/Female)	IC VL Dhan 68		LC (China 4, Thapachini)	
			Area (ha)	Production(q)	Area (ha)	Production(q)
1.	Sri Syam Singh S/o Sri Ramesh Singh	Gen/male	0.3	45.00	0.1	36.00
	Total		0.3	45.00	0.1	36.00
4. Village- Basulisera , Block- Dwarahaat , District- Almora Uttarakhand NSD/TPD/ DOH: 15.05.19/19.06.19/29.09.19						
Sl No	Farmer's Name and Fathers/Husband name	Categories (SC/ST/OBC/Gen) & Gender (Male/Female)	IC VL Dhan 68		LC (China 4, Thapachini)	
			Area (ha)	Production (q)	Area (ha)	Production(q)
1.	Sri Laxman Singh S/o Sri Narayan Singh	Gen/male	0.12	42.50	0.08	34.00
	Total		0.12	42.50	0.08	34.00
5.Village- Dhaunigarh , Block- Takula, District- Almora Uttarakhand NSD/TPD/DOH: 13.05.19/16.06.19/28.09.19						
Sl No	Farmer's Name and Fathers/Husband name	Categories (SC/ST/OBC/Gen) & Gender (Male/Female)	IC VL Dhan 68		LC (China 4, Thapachini)	
			Area (ha)	Production (q)	Area (ha)	Production(q)
1.	Sri Hari Singh Bora S/o Narayan Singh Bora	Gen/male	0.12	40.00	0.06	33.50
	Total		0.12	40.00	0.06	33.50

West Bengal

In West Bengal, rice has been cultivated in an area of 55.12 lakh ha with a productivity of 4.49 t/ha (paddy) with annual production is 247.6 lakh tons (paddy)[2018-19]. Rice is grown in the state under varying eco-systems on a variety of soils under varying climatic and hydrological conditions ranging from waterlogged and poorly drained to well drained situations and by the adaptation of rice to these agro-ecological factors. In general, four major rice eco-systems viz. Irrigated, Rainfed (Lowland & Upland), Coastal-saline and Flood-prone prevail in the state. All these rice eco-systems are predominant in different agro-climatic zones and farmers manoeuvre these to suit their needs with their past experiences of growing rice.

Rice Research Station (Govt. of West Bengal), Chinsurah (Hooghly) conducted 40 FLDs on a cafeteria of improved varieties and crop management techniques under different ecosystems in Seven districts (Howrah, Hooghly, Purba Bardhaman, Nadia, Alipurduar, CoochBehar and South 24 Parganas) in collaboration with Hooghly Krishi Vigyan Kendra (BCKV), Chinsurah (Hooghly); Village Welfare Society (VWS), Pancharul, Howrah; Nadia Zilla Farmers' Development Organization (NZFDO), Birnagar, Nadia; Digsui Large Sized Primary Co Op Agricultural Credit Society Ltd., Chinsurah- Mograh, Hooghly; BSSMP Bahumukhi Samabay Samity, Dhaniakhali Hooghly; Pakri Radhanagar Samabay Krishi Unnayan Samity Ltd., Pandua, Hooghly; Digha Gobindapur Samabay Krishi Unnayan Samity Ltd., Ausgram, Purba Bardhaman; Tapshikhata Service Cooperative Society Ltd, Alipurduar-I, Alipurduar; Sabujsathi Farmers Club, Jiranpur, CoochBehar; Paribesh Unnayan Parishad, Sagar, 24 Parganas(South) and Tagore Society for Rural Development, Rangabelia Project, Gosaba, 24 Parganas (South).

During Kharif 2019, twelve improved rice varieties were demonstrated in farmers' fields under different rice ecosystems in 13 villages of 4 districts (Howrah, Hooghly, Nadia and South 24 Parganas). They exhibited yield advantages to the extent of 12.0 - 37.8% in Irrigated Up / Medium Land, 9.6 – 13.0 in rainfed shallow 24.8 – 67.2 in Rainfed Semideep and 24.3 – 28.7 in coastal saline / Flood prone ecosystem when demonstrated with whole package of practices.

In addition to improved varieties, improved crop management techniques were also demonstrated at farmers' fields in a total of 10 villages under 7 CD Blocks in the 5 districts viz. Hooghly, Purba Bardhaman, Alipurduar, CoochBehar and South 24 Parganas. Compared with farmers' practice, yield advantages were recorded to the tune of 17.7 – 33.4 % with Machine Transplanter, 8.9 % with Dry DSR, 8.9 – 30.5 % with Integrated Pest / Disease Management (IPM /IDM), 37.5 % with Integrated Weed Management (IWM) and 20.0 % with Organic Cultivation of Rice.

Directorate of Agriculture (Govt. of West Bengal) demonstrated demonstration on Resource Conservation Technology with DRR Dhan 42 and Sahabagidhan in 54 farmers' fields of Purulia district during 2019-20. Nearly 15% was observed due to the intervention of resource conservation technology. Site-Specific Nutrient Management (Nutrient Expert) demonstration was undertaken in 15 farmers' fields and about 12% yield advantage was observed.

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location (Name of the village, Block, District)	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
1.	Improved Variety - Manisha	1.0	Jamuna	Vill:Manashree Block - Udaynarayanpur, Distt - Howrah	4.95	3.60	37.5
2.	Improved Variety - Bhupesh	1.0	Pratiksha	Do - Khorda Itarai, Block - Udaynarayanpur, Distt - Howrah	5.40	4.50	20.0
3.	Ajit	1.0	Pratiksha	Vill:Uttar Harishpur Block - Udaynarayanpur, Distt - Howrah	5.10	3.70	37.8
4.	Improved Variety - Sukumar	3.0	Shatabdi	Vill- Patra Vitasin, Block - Pandua, Dist - Hooghly	4.03	3.31	21.5
5.	Improved Variety - Muktashree	1.0	Swarna	Vill- Canpahati Block - Pandua, Dist - Hooghly	4.65	4.13	12.7
6.	Improved Variety - Muktashree	3.0	Pratiksha	Vill. Kamargeria Block Ranaghat -2 Dt.Nadia	3.17	2.55	24.3
7.	Improved Variety - Swarnali	1.0	Swarna	Vill- Ranagar, Block - Pandua, Dist - Hooghly	4.74	4.19	13.0
8.	Improved Variety - Amala	1.0	Swarna	Vill-Katagora, Block-Dhaniakhali, Dist-Hooghly	5.10	4.65	9.68
9.	Improved Variety - Sujala	1.0	Swarna	Vill-Katagora, Block-Dhaniakhali, Dist-Hooghly	4.87	3.90	24.8
10.	Improved Variety - Kanak	1.0	Meghi	Vill.Paharpur Block-Ranaghat-1 Dt. Nadia	4.60	2.75	67.2
11.	Improved Variety - Gosaba 5	1.0	Swarna	Vill- Kirtankhali, Block - Sagar, Dist - 24 Parganas (South)	Crop was damaged by inundation due to cyclone 'Bulbul'		
12.	Improved Variety - Gosaba 6	1.0	Swarna	Vill- Pakhirala, Block-Gosaba, Dist - 24 Parganas (South)	4.60	3.70	24.3
13.	Improved Variety - Rajendra Mashuri	1.0	CR 1017	Vill- Sonaga, Block-Gosaba, Dist - 24 Parganas (South)	4.57	3.55	28.7
14.	Machine Transplanter	8.0	Manual Transplntng	Vill-Balidanga, Block-Dhaniakhali, Dist-Hooghly	4.84	3.87	25.06
15.	Dry DSR	5.0	Manual Transplntng	Vill- Gobindapur, Block-Ausgram-I, Dist- Purba Bardhaman	6.10	5.60	8.9

Frontline Demonstration on Rice (2019-20)

S. No.	Technology Demonstrated	Area (ha)	Local Check	FLD Location (Name of the village, Block, District)	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
16.	Integrated Pest Management	4.0	Farmers' Practice	Vill- Pakri, Block- Pandua, Dist-Hooghly	4.22	3.5	20.57
17.	Integrated Disease Management	4.0	Farmers' Practice	Vill : Digsui, Block: Chinsurah Mogra, Dist-Hooghly	4.7	3.93	19.59
18.	Integrated Weed Management	1.0	Farmers' Practice	Vill- Lahiripur, Block- Gosaba, Dist - 24 Parganas (South)	4.40	3.20	37.5
19.	Organic Rice	1.0	Farmers' Practice	Vill- Dayapur, Block- Gosaba, Dist - 24 Parganas (South)	4.20	3.50	20.0
20.	Resource Conservation Technology (with Sahabagidhan and DRR Dhan 42)	7	Conventional practices	Purulia	4.56	3.97	14.82
21.	Site-Specific Nutrient Management Nutrient Expert (with Sahabagidhan and DRR Dhan 42)	3	Conventional practices	Purulia	4.49	4.0	12.27



Frontline Demonstration on Rice (2019-20)



Results of FLDs on Resource Conservation Technology (System of Assured Rice Production-Kharif or SARP-K) in *Kharif* Rice in the District of Purulia (West Bengal) during 2019-20.

Sl. No.	Name of Farmers	Farmer's Address			FLD Area (Big ha)	Variety	Date of Sowing	Date of Transplanting	Grain yield (kg/ha)		Yield advantage (%)
		Village	Mouza	Block					FLD Plot	Conventional	
1.	Debendra Gorain	Chepra	Chepra	Purulia-II	1.0	Sahbhagi Dhan	11.07.2019	03.09.2019	4687	4026	16.4
2.	Amarshankar Gorain	Chepra	Chepra	Purulia-II	1.0	Sahbhagi Dhan	10.07.2019	30.08.2019	4531	3942	14.9
3.	Madan Mahato	Dubcharka	Dubcharka	Purulia-II	1.0	DRR 42	10.07.2019	29.08.2019	4765	4129	15.4
4.	Kajal Mahato	Dubcharka	Dubcharka	Purulia-II	1.0	DRR 42	09.07.2019	01.08.2019	4828	4085	18.2
5.	Kartik Paramanik	Dumdumi	Dumdumi	Purulia-II	1.0	DRR 42	09.07.2019	30.08.2019	4501	3958	13.7
6.	Manindranath Mahato	Dumdumi	Dumdumi	Purulia-II	1.5	Sahbhagi Dhan	10.07.2019	30.08.2019	4682	4162	12.5
7.	Samaresh Mahato	Dumdumi	Dumdumi	Purulia-II	1.0	DRR 42	09.07.2019	29.08.2019	4685	4125	13.6
8.	Parikhit Mahato	Dumdumi	Dumdumi	Purulia-II	1.0	Sahbhagi Dhan	09.07.2019	28.08.2019	4520	3886	16.3
9.	Bhimchandra Mahato	Dumdumi	Dumdumi	Purulia-II	1.0	DRR 42	09.07.2019	28.08.2019	4586	3908	17.3
10.	Gourchandra Mahato	Dumdumi	Dumdumi	Purulia-II	1.0	DRR 42	10.07.2019	29.08.2019	4791	3926	22.0
11.	Sarbbeswar Mahato	Palashkala	Palashkala	Purulia-II	1.0	Sahbhagi Dhan	11.07.2019	01.08.2019	4572	3985	14.7
12.	Malati Mahato	Palashkala	Palashkala	Purulia-II	1.0	Sahbhagi Dhan	10.07.2019	29.08.2019	4623	3920	17.9
13.	Budhan Mahato	Palashkala	Palashkala	Purulia-II	1.0	Sahbhagi Dhan	10.07.2019	29.08.2019	4480	3965	13.0
14.	Buddheswar Mahato	Palashkala	Palashkala	Purulia-II	1.5	Sahbhagi Dhan	10.07.2019	30.08.2019	4604	4185	10.0

Frontline Demonstration on Rice (2019-20)

15.	Santosh Mahato	Pindra	Pindra	Purulia-II	1.5	DRR 42	09.07.2019	02.09.2019	4595	4087	12.4
16.	Anupam Mahato	Pindra	Pindra	Purulia-II	1.0	DRR 42	09.07.2019	30.08.2019	4620	4010	15.2
17.	Asitbushan Mahato	Pindra	Pindra	Purulia-II	1.0	DRR 42	10.07.2019	30.08.2019	4858	4286	13.3
18.	Mrinal Kanti Mahato	Pindra	Pindra	Purulia-II	1.0	DRR 42	09.07.2019	29.08.2019	4702	4189	12.2
19.	Nimai Chandra Mandi	Udalbani	Udalbani	Bandwan	1.5	DRR 42	09.07.2019	01.08.2019	4760	4283	11.1
20.	Joyram Murmu	Udalbani	Udalbani	Bandwan	1.0	DRR 42	09.07.2019	25.08.2019	4420	4087	8.1
21.	Akil Mandi	Udalbani	Udalbani	Bandwan	1.0	DRR 42	10.07.2019	26.08.2019	4625	3985	16.1
22.	Anata Hembram	Udalbani	Udalbani	Bandwan	1.0	Sahbhagi Dhan	10.07.2019	27.08.2019	4423	3659	20.9
23.	Gisunath Mandi	Udalbani	Udalbani	Bandwan	1.0	DRR 42	09.07.2019	22.08.2019	4429	3850	15.0
24.	Thularam Baskey	Kendapara	Kendapara	Bandwan	1.5	DRR 42	11.07.2019	26.08.2019	4438	4165	6.6
25.	Dipankar Mandi	Kendapara	Kendapara	Bandwan	1.0	DRR 42	10.07.2019	25.08.2019	4395	3985	10.3
26.	Sanath Baskey	Kendapara	Kendapara	Bandwan	1.0	Sahbhagi Dhan	10.07.2019	24.08.2019	4792	3878	23.6
27.	Sahebram Besra	Jamunagora	Jamunagora	Bandwan	1.0	Sahbhagi Dhan	10.07.2019	24.08.2019	4498	4058	10.8
28.	Guhiram Mandi	Jamunagora	Jamunagora	Bandwan	1.0	DRR 42	09.07.2019	21.08.2019	4797	4129	16.2
29.	DhirenSingh Sarder	Chirugora	Chirugora	Bandwan	1.0	Sahbhagi Dhan	09.07.2019	20.08.2019	4489	4289	4.7
30.	Birsingh Sarder	Chirugora	Chirugora	Bandwan	1.0	Sahbhagi Dhan	10.07.2019	22.08.2019	4586	3958	15.9
31.	Shiboram Bauri	Monogram	Kashibera	Raghunathp II	1.5	Sahbhagi Dhan	12.07.2019	25.08.2019	4365	3852	13.3
32.	Nirodbaran Bauri	Monogram	Kashibera	Raghunathp II	1.0	Sahbhagi Dhan	13.07.2019	26.08.2019	4382	3682	19.0

Frontline Demonstration on Rice (2019-20)

33.	Gobinda Bauri	Monogram	Kashibera	Raghunathp II	1.0	Sahbhagi Dhan	13.07.2019	22.08.2019	4386	3950	11.0
34.	Madhav Bauri	Monogram	Kashibera	Raghunathp II	1.0	Sahbhagi Dhan	13.07.2019	24.08.2019	4289	3859	11.1
35.	Mangala Bauri	Monogram	Kashibera	Raghunathp II	1.0	DRR 42	13.07.2019	24.08.2019	4312	3847	12.1
36.	Kartick Bauri	Monogram	Kashibera	Raghunathp II	1.0	Sahbhagi Dhan	13.07.2019	26.08.2019	4295	3875	10.8
37.	Satyaban Kumar	Patrahatu	Patrahatu	Jhalda-II	1.5	DRR 42	09.07.2019	26.08.2019	5254	4824	8.9
38.	Paban Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	Sahbhagi Dhan	10.07.2019	27.08.2019	5257	4682	12.3
39.	Bikash Mahato	Radhanagar	Bhotadi	Puncha	1.5	Sahbhagi Dhan	10.07.2019	26.08.2019	4586	3725	23.1
40.	Madan Mahato	Radhanagar	Bhotadi	Puncha	1.0	DRR 42	10.07.2019	25.08.2019	4658	3985	16.9
41.	Subhendu Mahato	Ramkrishna pur	Ramkrishna	Para	1.0	Sahbhagi Dhan	9.07.2019	26.08.2019	4325	3602	20.1
42.	Ashok Mahato	Ramkrishna pur	Ramkrishna	Para	1.0	Sahbhagi Dhan	11.07.2019	27.08.2019	4428	3852	15.0
43.	Arjun Mahato	Bhalagora	Bhalagora	Para	1.0	DRR 42	10.07.2019	27.08.2019	4530	3785	19.7
44.	Suttam Mahato	Bhalagora	Bhalagora	Para	1.0	Sahbhagi Dhan	10.07.2019	26.08.2019	4278	3806	12.4
45.	Milan Banerjee	Bhalagora	Bhalagora	Para	1.0	Sahbhagi Dhan	10.07.2019	25.08.2019	4358	3835	13.6
46.	Judhisthir Mahato	Bhalagora	Bhalagora	Para	1.0	Sahbhagi Dhan	09.07.2019	24.08.2019	4502	3980	13.1
47.	Dasorathi Mahato	Bhalagora	Bhalagora	Para	1.5	Sahbhagi Dhan	09.07.2019	24.08.2019	4369	3568	22.4
48.	Biswanath Mahato	Aharrah	Aharrah	Arsha	1.5	DRR 42	09.07.2019	25.08.2019	4312	3758	14.7
49.	Kalipada Mahato	Aharrah	Aharrah	Arsha	1.0	Sahbhagi Dhan	11.07.2019	29.08.2019	4612	3985	15.7
50.	Subodh Rajwar	Aharrah	Aharrah	Arsha	1.0	Sahbhagi Dhan	10.07.2019	28.08.2019	4682	4185	11.9

Frontline Demonstration on Rice (2019-20)

51.	Sristidhar Mahato	Aharrah	Aharrah	Arsha	1.0	DRR 42	10.07.2019	19.08.2019	4425	3754	17.9
52.	Gurupada Mahato	Aharrah	Aharrah	Arsha	1.0	DRR 42	10.07.2019	22.08.2019	4362	3686	18.3
53.	Madhusudan Mahato	Aharrah	Aharrah	Arsha	1.5	Sahbhagi Dhan	11.07.2019	23.08.2019	4725	3982	18.7
54.	Shaileswar Mahato	Khududih	Khududih	Baghmundi	1.5	Sahbhagi Dhan	10.07.2019	21.08.2019	4250	3558	19.4
	Average								4560	3976	14.82

Results of FLDs on Site-Specific Nutrient Management (Nutrient Expert) in *Kharif* Rice in the District of Purulia (West Bengal) during 2019-20.

Sl. No.	Name of Farmers	Farmer's Address			FLD Area (Big ha)	Variety	Date of Sowing	Date of Transplanting	Grain yield (kg/ha)		Yield advantage (%)
		Village	Mouza	Block					FLD Plot	Conventional	
1.	Kenaram Chakraborty	Charrah	Charrah	Purulia-II	1.0	DRR 42	09.07.2019	14.08.2019	5025	4290	17.1
2.	Soumen Dey	Charrah	Charrah	Purulia-II	1.0	Sahbhagi Dhan	09.07.2019	14.08.2019	4888	4225	15.7
3.	Sahadev Kabiraj	Charrah	Charrah	Purulia-II	1.0	DRR 42	09.07.2019	14.08.2019	5290	4756	11.2
4.	Rabilochan Mahato	Bonagabari	Bongabari	Purulia-II	1.0	DRR 42	09.07.2019	11.08.2019	4658	3985	16.9
5.	Bijoykrishan Mahato	Bonagabari	Bongabari	Purulia-II	1.0	Sahbhagi Dhan	09.07.2019	10.08.2019	4552	3952	15.2
6.	Mihir Mahato	Bonagabari	Bongabari	Purulia-II	1.0	Sahbhagi Dhan	10.07.2019	11.08.2019	4438	3895	13.9
7.	Kanai Chandra Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	DRR 42	11.07.2019	20.08.2019	4186	3785	10.6
8.	Subhash Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	DRR 42	10.07.2019	18.08.2019	4804	4142	16.0
9.	Manohar Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	Sahbhagi Dhan	10.07.2019	18.08.2019	4385	3958	10.8

Frontline Demonstration on Rice (2019-20)

10.	Padmalochan Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	Sahbhagi Dhan	10.07.2019	17.08.2019	4286	3972	7.9
11.	Uttam Kumar	Patrahatu	Patrahatu	Jhalda-II	1.0	Sahbhagi Dhan	10.07.2019	18.08.2019	4275	3685	16.0
12.	Satyanarayan Mahato	Radhanagar	Bhotadi	Puncha	1.0	DRR 42	12.07.2019	21.08.2019	4085	3775	8.2
13.	Nibaran Mahato	Radhanagar	Bhotadi	Puncha	1.0	Sahbhagi Dhan	12.07.2019	22.08.2019	4358	4059	7.4
14.	Ashok Mahato	Radhanagar	Bhotadi	Puncha	1.0	Sahbhagi Dhan	12.07.2019	22.08.2019	4202	3785	11.0
15.	Krishna Pada Mahato	Radhanagar	Bhotadi	Puncha	1.0	DRR 42	11.07.2019	21.08.2019	3985	3756	6.1
	Average								4494	4001	12.27

IV. ECOSYSTEMWISE PERFORMANCE OF FLD TECHNOLOGIES

During the current year, demonstrations were conducted in different ecosystems viz., irrigated, rainfed uplands, shallow lowlands etc., The technologies demonstrated have recorded differential performance and yield advantages in different ecosystems. It may be noted here that the actual demonstration site may not be the true representative of a particular ecology. Care may be taken while undertaking the large scale adoption of those varieties / technologies for that ecosystem. While dealing with the results of FLDs ecosystem-wise resource constraints, socio-economic contexts, agro-climatic factors may be considered. Performance of a technology in well endowed areas may have several favorable factors associated with the recorded productivity.

Performance of the demonstrated technologies in Irrigated Ecosystem

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Andhra Pradesh	BPT 2295 (2018)	4	BPT 5204	Guntur	7.06	6.56	7.62
Andhra Pradesh	Integrated Weed Management	10	Local practices with BPT 5204	Banavasi, Kurnool	6.91	5.98	15.55
Andhra Pradesh	Ksheera (MTU 1172)	10	Swarna	Unguturu, Eluru, Mummidivaram, Yelamanchili	6.61	6.46	2.32
Andhra Pradesh	Varam (MTU 1190)	10	BPT 5204	Akiveedu, Pentapadu, Ungaturu, Jaggampeta, Dendalur	6.28	5.71	9.98
Bihar	CR Dhan 909	10	Basmatiya, Swarna	Madhubani, Buxar district	5.47	4.35	25.86
Gujarat	GNR-5	4	Jaya	Navsari	5.23	4.69	11.51
Gujarat	GNR-7	26	GR 11	Navsari	5.18	4.48	15.63
Gujarat	Mahisagar	10	Local Varieties	Kheda, Ahmedabad, Anand, Mahisagar, Dahod	4.90	4.43	10.61
Gujarat	GAR-14	10	Local Varieties	Kheda, Ahmedabad, Anand, Baroda, Gandhinagar, Sabarkantha	4.45	3.70	20.27
Karnataka	AWD with HYV	10	Farmers' practices	Mandya and Tumkur districts	5.37	5.03	6.76
Karnataka	Daksha (KMP-175) under aerobic conditions	10	Rasi	Mandya & Mysore District	5.00	4.00	25.00
Karnataka	B.R.R.I. Dhan-75	3	Local varieties	Mandya District	5.50	4.00	37.50
Karnataka	BINA Dhan-17	2	Local varieties	Mandya District	5.75	4.00	43.75

Frontline Demonstration on Rice (2019-20)

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Karnataka	Alternate wetting and Drying method	5	Continuous flooding	Sriramanagar, Baragur	7.01	6.74	4.01
Karnataka	RP Bio-226	5	BPT-5204	Herur, Sriramanagar, Basavanna camp (Koppal Dt)	7.23	7.11	1.69
Karnataka	IPM in rice	5	Local practices	Village :Sriramanagar Taluka: Gangavathi District:Koppal	7.52	7.26	3.58
Kerala	KAU Akshaya	8.0	Uma, Ponmani	Palakkad, Idukki, Thrissur	6.75	6.00	12.50
Kerala	KAU Supriya	2.0	Uma	Palakkad	6.53	5.61	16.40
Kerala	MO 23 (Pournami)	5	Mo 16 (Uma)	Nedumudi & Kainakary village, Chambakulam block, Kuttanad Thaluk, Alappuzha district	6.33	5.32	20.13
Kerala	Multi nutrient foliar mix (Sampoorna developed by KAU)	5	Uma + without micronutrient application	Naluchira padasekharam Purakad Ambalapuzha Alappuzha	6.2	4.8	18.98
Kerala	'KAU Weed Wiper'	5	Mo 16 UMA	Alappuzha	4.6	3.7	29.17
Kerala	Management of glume discolouration disease	5	Mo 16 (Uma)	Naluchira padasekharam, Purakkad, Ambalapuzha, Alappuzha	5.77	4.16	24.32
Kerala	Conservation of natural enemies for the management of insect pests in rice	5	Mo 16 (Uma)	Champakulam, Kuattanad, Alappuzha	3.87	4.82	-19.71
Madhya Pradesh	JRB 1	10	MTU 1010	V.Koste ,Bl. Waraseoni, Dist. Balaghat	5.27	4.53	16.34
Madhya Pradesh	JR 81	8	MTU 1010	V.Botta Hajari ,Bl. Lalburra, Dist. Balaghat	5.37	4.54	18.28
Maharashtra	Karjat 9	5	Local varieties	Raigad, Karjat	4.18	3.62	15.47
Maharashtra	Karjat 10	5	Local varieties	Karjat, raigad	4.75	4.23	12.29
Maharashtra	Ratnagiri-8 (Notified in 2019 CVRC)	20	Swarna	Palghar, Raigad, Ratnagiri, Sindhudurg	5.76	4.49	28.29
Odisha	CR Dhan 100	50	Local varieties	Jajpur Cluster	4.13	4.01	2.99
Odisha	CR Dhan 101		Local varieties	Kendrapada Cluster, Cuttack Cluster, Odapada-Dhenkanal Cluster	4.27	3.87	10.34

Frontline Demonstration on Rice (2019-20)

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Odisha	CR Dhan 201		Local varieties	Jajpur Cluster	4.31	3.85	11.95
Odisha	CR Dhan 203		Local varieties	Jajpur Cluster	4.11	4.00	2.75
Odisha	CR Dhan 204		Local varieties	Jajpur Cluster	4.28	3.95	8.35
Odisha	CR Dhan 205		Local varieties	Kendrapada Cluster, Cuttack Cluster, Odapada-Dhenkanal Cluster	4.23	3.93	7.63
Odisha	CR Dhan 206		Local varieties	Dhenkanal cluster	5.03	4.25	18.35
Odisha	CR Dhan 304		Local varieties	Dhenkanal cluster	5.00	4.25	17.65
Odisha	CR Dhan 306		Local varieties	Dhenkanal Sadar-Dhenkanal cluster (6.00	4.80	25.00
Odisha	CR Dhan 310		Local varieties	Dhenkanal Cluster, Cuttack Cluster, Kendrapada cluster	4.73	4.25	11.29
Odisha	CR Dhan 311		Local varieties	Jajpur cluster	4.90	4.30	13.95
Odisha	CR Dhan 601		Local varieties	Jajpur cluster	5.24	4.35	20.46
Odisha	Hasanta	10	Swarna	At/PO-Bhakar Sahi Block- Balipatna Dist- -Khordha	5.39	4.50	19.78
Tamil Nadu	ADT 51	15	CR 1009	Ariyalur, Thanjavur, Thiruvarur, Nagapattinam	6.42	5.82	10.31
Tamil Nadu	ADT 53	15	ADT 43 and CO 51	Thanjavur, Thiruvarur, Nagapattinam	6.09	5.46	11.54
Tamil Nadu	IPDM with ADT 51	10	Farmers Practices	Nannilam block of Thiruvarur and Nagapattinam districts	5.97	4.12	44.90
Tamil Nadu	CO 52	30	Improved White Ponni, TKM 13, CO (R) 50, CO 43, ADT (R) 46, BPT 5204	Trichy, Dindigul, Villupuram and Theni	6.60	5.69	15.99
Tamil Nadu	Improved Samba Mahsuri	3	BPT 5204	Lalgudi	4.03	3.5	15.14
Tamil Nadu	DRR Dhan 44	2	BPT 5204	Lalgudi	3.96	3.5	13.14
Tamil Nadu	TKM 13	10	BPT 5204	Thiruvallur	5.61	4.95	13.33
Telangana	Mechanized transplanting	10	Manual transplanting	Thudukurthy, Nandiwaddeman, Yendabetla, Nallavelli, Khanapur villages of Nagarkurnool and Kothathanda village of Mahabubnagar	6.72	6.50	3.3

Frontline Demonstration on Rice (2019-20)

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Telangana	AWD in rice	5	Field submergence	Peedshapur Burjugadda tanda	6.13	5.91	3.7
Telangana	Chemical weed management	5	Hand weeding	Peedshapur Burjugadda tanda	6.2	6.0	3.3
Telangana	Integrated Weed Management + DRRDhan46	10	Local practices	Karimnagar	5.79	5.09	13.75
Telangana	Integrated Crop Management + JGL – 24423	10	MTU 1010	Karimnagar	7.03	6.88	2.18
Telangana	IPM + BRRI 75	10	MTU 1010	Karimnagar	7.01	6.85	2.34
Telangana	Direct sown rice through Drum seeder + BINA - 17	10	Conventional practices + KNM 118	Karimnagar	7.00	6.80	2.94
Telangana	RNR 15048	5	BPT 5204	Agamothukur and Gurrappagudem	6.53	5.83	12.01
Telangana	BRRI 75	5	BPT 5204	Agamothukur and Gurrappagudem	6.30	5.77	9.19
Telangana	KNM 118	5	BPT 5204	Agamothukur and Gurrappagudem	7.07	6.37	10.99
Telangana	WGL 44 (Siddhi)	10	BPT -5204	Paidipally Nagaram village of Parkal mandal, Warangal Rural district, Telangana	7.0	5.60	25
Telangana	WGL 915 (Warangal Rice 1)	4	MTU 1001	Kanaparthi village, Regonda mandal of Jayashankar Bhupalpally district, Telangana	6.46	5.77	11.86
Telangana	CGZR 2	5	BPT 5204	Mahabubnagar	4.88	3.50	39.43
Telangana	Protozin			Mahabubnagar	4.70	3.50	34.29
Telangana	Zincorice			Mahabubnagar	3.74	3.50	6.86
Tripura	Gomati, Tripura Nirog ICM	40					
Uttar Pradesh	NARENDRA SONA/ New Variety	10.4	NDR 359	Gonda, Ayodhya	5.28	3.92	34.69
Uttar Pradesh	Sambha Sub-1/ New Variety	3.2	BPT 5205, NDR 359, Sarjoo 52	Azamgarh, Ayodhya, Gonda	5.19	3.95	31.39
Uttar Pradesh	Sambha Sub-1/ INM	3.6	Jal Lahri, NDR 359, BPT 5204	Ayodhya	5.08	3.75	35.47
Uttar Pradesh	NARENDRA SONA/ INM	2	BPT 5204, NDR 359, Sarjoo 52	Ayodhya	5.09	4.02	26.62
Uttar Pradesh	NDR 2101/ New Variety	4.2	Sambha Mahsuri, NDR 359	Ayodhya, Palpura	5.4	3.86	39.90

Frontline Demonstration on Rice (2019-20)

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Uttar Pradesh	NDR 2101/ INM	1.6	NDR 359	Ayodhya, Palpura	5.36	3.75	42.93
Uttar Pradesh	SHIATS Dhan 1	3	NDR 359 Sonam	Pragyaraj	5.56	4.35	27.82
Uttar Pradesh	SHIATS Dhan 3	3	NDR 359 Sonam	Pragyaraj	5.30	4.35	21.84
Uttar Pradesh	SHIATS Dhan 5	4	NDR 359 Sonam	Pragyaraj	5.39	4.60	17.17
Uttar Pradesh	Pusa 1718	3	Pusa 1121	Gautam Budh Nagar	5.54	5.09	8.84
Uttar Pradesh	Pusa-1509	3	Pusa 1121	Gautam Budh Nagar	5.28	5.09	3.73
Uttarakhand	VL Dhan 68	5	Thapachini, China 4, Taichung	Toonakoat, Tipola, Block- Tarikhet, District- Almora, Uttarakhand	4.17	3.42	21.86
West Bengal	Improved Variety Manisha -	1.0	Jamuna	Vill:Manashree Block - Udaynarayanpur, Distt – Howrah	4.95	3.60	37.5
West Bengal	Improved Variety Bhupesh -	1.0	Pratiksha	Do - Khorda Itarai, Block - Udaynarayanpur, Distt – Howrah	5.40	4.50	20.0
West Bengal	Ajit	1.0	Pratiksha	Vill:Uttar Harishpur Block - Udaynarayanpur, Distt – Howrah	5.10	3.70	37.8
West Bengal	Improved Variety Sukumar -	3.0	Shatabdi	Vill- Patra Vitasin, Block – Pandua, Dist – Hooghly	4.03	3.31	21.5
West Bengal	Improved Variety Mukdashree -	1.0	Swarna	Vill- Canpahati Block – Pandua, Dist – Hooghly	4.65	4.13	12.7
West Bengal	Improved Variety Mukdashree -	3.0	Pratiksha	Vill. Kamargeria Block Ranaghat -2 Dt.Nadia	3.17	2.55	24.3
West Bengal	Machine Transplanter	8.0	Manual Transplntng	Vill-Balidanga, Block- Dhaniakhali, Dist- Hooghly	4.84	3.87	25.06
West Bengal	Dry DSR	5.0	Manual Transplntng	Vill- Gobindapur, Block- Ausgram-I, Dist- Purba Bardhaman	6.10	5.60	8.9

Frontline Demonstration on Rice (2019-20)

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
West Bengal	Resource Conservation Technology (with Sahabagidhan and DRR Dhan 42)	7	Conventional practices	Purulia	4.56	3.97	14.82
West Bengal	Site-Specific Nutrient Management Nutrient Expert (with Sahabagidhan and DRR Dhan 42)	3	Conventional practices	Purulia	4.49	4.0	12.27
		577			4.99	4.06	22.99

Performance of the demonstrated technologies in Rainfed Shallow Lowland Ecosystem

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Assam	CR Dhan 310	2	Ranjit	Village: Bongalpara Block: Hajo District: Kamrup	6.5	4.9	32.65
Assam	CR Dhan 909	23		Village: Bongalpara Block: Hajo District: Kamrup	Flood affected		
Chhattisgarh	IGKV R 1	2	Local varieties	Block- Saja, Abhanpur	5.34	4.69	13.86
Chhattisgarh	Indira Aerobic 1	5	Local varieties	Block- Saja, Abhanpur, Arang	4.18	3.74	11.76
Chhattisgarh	CG Devbhog	21	Local varieties	Block- Saja, Abhanpur, Arang, Patan	4.42	3.91	13.04
Chhattisgarh	CG Sugandhit Bhog	2	Local varieties	Block- Patan	4.65	4.10	13.41
Chhattisgarh	KRH 4	8	Local varieties	Khapri (Taluka: Girhola, District: Durg) Teliyapuran (Taluka: Semarsal, District: Mungel) Nawagarh (Taluka: Nawagarh District: Bemetara)	4.66	4.26	9.39
Odisha	Pratikshya	8	Local varieties		4.99	4.73	5.50
Odisha	Hasanta	2	Local varieties		5.66	4.97	13.88
West Bengal	Improved Variety Swarnali	1.0	Swarna	Vill- Ranagar, Block – Pandua, Dist – Hooghly	4.74	4.19	13.0

Frontline Demonstration on Rice (2019-20)

West Bengal	Improved Variety – Amala	1.0	Swarna	Vill-Katagora, Block- Dhaniakhali, Dist- Hooghly	5.10	4.65	9.68
West Bengal	Integrated Pest Management	4.0	Farmers' Practice	Vill- Pakri, Block- Pandua, Dist- Hooghly	4.22	3.5	20.57
West Bengal	Integrated Disease Management	4.0	Farmers' Practice	Vill : Digsui, Block: Chinsurah Mogra, Dist-Hooghly	4.7	3.93	19.59
West Bengal	Integrated Weed Management	1.0	Farmers' Practice	Vill- Lahiripur, Block- Gosaba, Dist - 24 Parganas (South)	4.40	3.20	37.5
West Bengal	Organic Rice	1.0	Farmers' Practice	Vill- Dayapur, Block- Gosaba, Dist - 24 Parganas (South)	4.20	3.50	20.0
		85			4.84	4.16	16.35

Performance of the demonstrated technologies in Rainfed Upland Ecosystem

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Chhattisgarh	Samleshwari	5	Chudi dhan	Villages- Tirathgarh and Bademarenga District- Bastar	4.2	2.5	68.00
Jharkhand	Sahbhagi Dhan with DSR	30	Lalat	Ramgarh, Hazaribagh, Chatra and Koderma	4.2	3.2	31.25
Jharkhand	IR 64 Drt.1 with DSR		Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.0	4.0	25.00
Jharkhand	Abhisekh with DSR		Shukla-64	Ramgarh, Hazaribagh, Chatra and Koderma	5.2	4.0	30.00
Jharkhand	DRR Dhan 42 under aerobic cultivation	35	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.33	3.0	11.00
Jharkhand	CR Dhan 310	5	Lalat, IR-64, IR-36	Deoghar, Ramgarh, Hazaribag, Latehar, and Ranchi	3.43	3.0	14.33
Jharkhand	BVS-1, IR-64 drt-1, Sahbhagidhan and BVD-110	15	Local var.	Vill. Kanjgi Block: Chanho Dist. Ranchi	3.9	3.2	21.88

Frontline Demonstration on Rice (2019-20)

Madhya Pradesh	Improved Chinnore	6	Jai sree Ram, Sonam	V.Garra ,Bl. Lalburra, Dist. Balaghat 2	2.26	3.97	-43.07
Madhya Pradesh	Improved Jeera Shanker	6	Jai sree Ram, Sonam	V.Nilji ,Bl. Lalburra, Dist. Balaghat	2.97	4.05	-26.67
Maharashtra	Sakoli-9	5	Local varieties	Jambhili Sadak, Sakoli Tk, Bhandara Dt	4.25	3.55	19.72
		107			3.84	3.44	11.63

Performance of the demonstrated technologies in Hill Ecosystem

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Himachal Pradesh	'HPR 2880' with complete POP	5.17	HPR 2143 and local	Rait, Nagrota Bhagwan, and Baijnath blocks of Kangra district	3.76	2.78	35.25
Himachal Pradesh	HPR 2612 (scented rice) with complete POP	1.0	RP 2421	Baijnath & Nagrota blocks of Kangra district	3.58	2.70	32.59
Himachal Pradesh	HPR 2795 with complete POP	0.83	Local	Rait block of Kangra district	3.19	2.53	26.09
Himachal Pradesh	"HPR 2656' upland rice variety with complete POP	1.0	Local	Rait block of Kangra district	3.06	2.47	23.89
Jammu and Kashmir	Shalimar Rice 4 (for lower altitudes)	31.4	Jehlum, SR1, SR2, SR3	Anatnag, Kupeara, Ganderbal	7.39	6.17	19.77
Jammu and Kashmir	Shalimar Rice 5 (for higher altitudes)	3.6	K332	Anatnag	5.16	4.13	24.94
Jammu and Kashmir	Basmati-564	14	Basmati - 370	Taluka: R.S. Pura District: Jammu	3.41	2.42	40.91
Jammu and Kashmir	SJR-129	6	Basmati - 370	Taluka: R.S. Pura District: Jammu	3.70	2.43	52.26
Manipur	RCM 13 RCM 7	5	Kumbiphou local land race	Kumbi village cluster, Bishnupur district	4.73	3.49	32.6
		68			4.22	3.23	30.65

Performance of the demonstrated technologies in Semi-Deep

State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
West Bengal	Improved Variety – Sujala	1.0	Swarna	Vill-Katagora, Block-Dhaniakhali, Dist-Hooghly	4.87	3.90	24.8
West Bengal	Improved Variety – Kanak	1.0	Meghi	Vill.Paharpur Block-Ranaghat-1 Dt. Nadia	4.60	2.75	67.2
		2.0			4.73	3.32	42.46

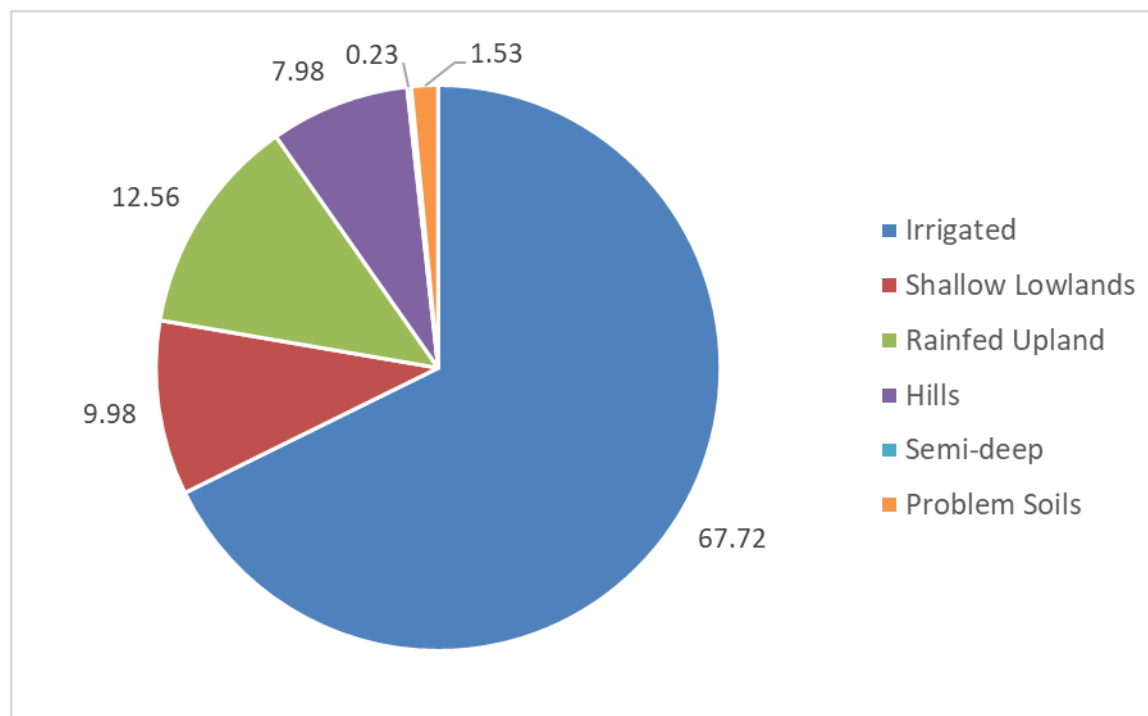
Performance of the demonstrated technologies in Coastal Saline/Problem Soils

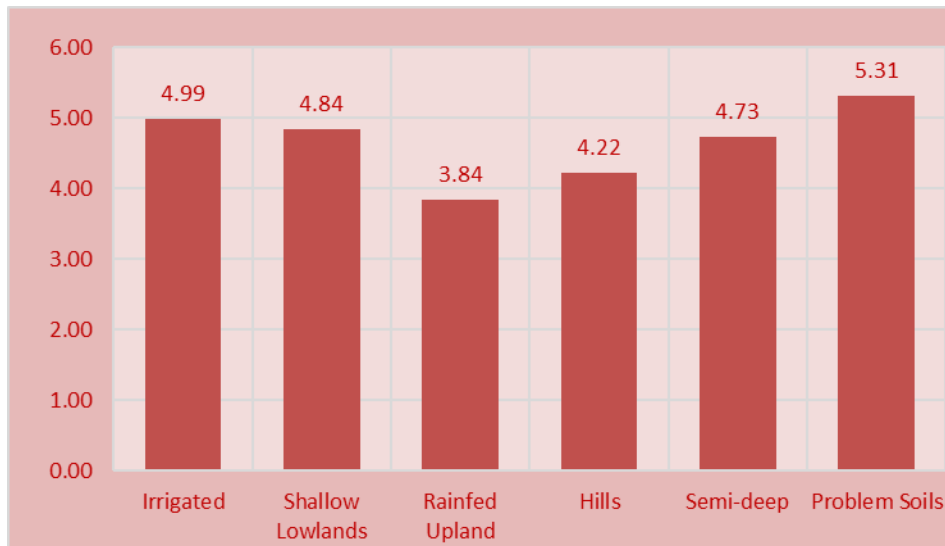
State and agency / organization	Technologies demonstrated	Area (ha)	Local check	Location	FLD Yield (t/ha)	Check Yield (t/ha)	% Yield Advantage
Telangana	Sodic soil management	10	Local practices	Chandepally village, Motakondur mandal of Yadadri district	6.75	4.92	37.20
West Bengal	Improved Variety – Gosaba 5	1.0	Swarna	Vill- Kirtankhali, Block – Sagar, Dist - 24 Parganas (South)	Crop was damaged by inundation due to cyclone 'Bulbul'		
West Bengal	Improved Variety – Gosaba 6	1.0	Swarna	Vill- Pakhirala, Block- Gosaba, Dist - 24 Parganas (South)	4.60	3.70	24.3
West Bengal	Improved Variety – Rajendra Mashuri	1.0	CR 1017	Vill- Sonaga, Block- Gosaba, Dist - 24 Parganas (South)	4.57	3.55	28.7
		13.0			5.31	4.06	30.81

Out of 852 FLDs reported, about 67.7% were conducted in irrigated rice ecosystem; whereas about 12.56% of FLDs were conducted in rainfed uplands. More than 9% of FLDs were organized in shallow lowlands and 7.98% in hill ecologies. There is a scope to increase the number of FLDs in rainfed and shallow lowland ecologies. The summary statement reveals that the mean yield advantage was the highest in semi deep ecologies (42.46%) followed by Problem Soils/Coastal Saline (30.81%), hills (30.65%). There is a tremendous scope to bridge the yield gaps (particularly Yield gap-II) in case of Rainfed uplands (11.63% mean yield advantage), Shallow lowlands (16.35 %) and irrigated ecologies (22.91%). For this, proper extension strategies need to be deployed for large scale adoption of these technologies.

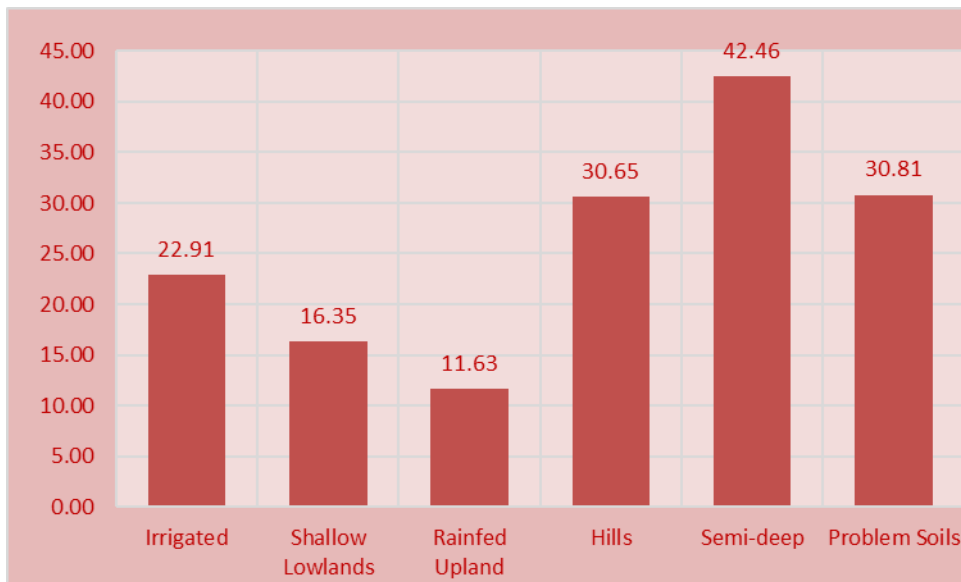
SUMMARY STATEMENT ON FLDs in VARIOUS ECOSYSTEMS

Ecosystem	Total FLDs (ha)	%	Mean FLD Yield (t/ha)	Mean Check Yield (t/ha)	Mean % Yield Advantage
Irrigated	577	67.72	4.99	4.06	22.91
Shallow Lowlands	85	9.98	4.84	4.16	16.35
Rainfed Upland	107	12.56	3.84	3.44	11.63
Hills	68	7.98	4.22	3.23	30.65
Semi-deep	2	0.23	4.73	3.32	42.46
Problem Soils/Coastal Saline	13	1.53	5.31	4.06	30.81
Total or Mean	852		4.65	3.71	25.80





MEAN FLD YIELDS OBTAINED ACROSS THE ECOSYSTEMS



MEAN YIELD ADVANTAGES OBTAINED ACROSS THE ECOSYSTEMS

Promising Rice Technologies Identified from FLDs 2019-20 Programme

Following are some of the promising technologies identified under the FLD programme during the year 2019-20. In total 50 technologies have been identified from 20 states. The criteria adopted to identify these technologies are relative yield advantages over the existing technologies and the kind local problem the technology tried to address. This is not an exhaustive list, but only indicative list giving those technologies that could be tried in these states.

These technologies will help either in withstanding abiotic stresses (Sambha Sub-1 + INM for submergence, DRR Dhan 42 for drought tolerance, Daksha for aerobic condition), improving the field productivity (Samleshwari, SJR-129, BINA Dhan-17, Kanak, Ajit, Ratnagiri-8, Shalimar Rice 40), solving the local problems (Problem soil management, KAU Weed Wiper), labour scarcity (Machine transplanting), early harvest for facilitating rabi crops (Sahbhagi dhan), better basmati options for farmers (Basmati 564), consumer preferences (RC Maniphou-13), replacing the popular varieties (CO 52, TKM 13, CR Dhan 909) etc., But a viable strategy should be in place before these promising technologies making a difference in the livelihoods of farmers.

It may be noted that, a technology with highest % yield advantage may not necessarily be a technology that has wider adaptability. In such cases, the yield advantage may help in enhancing the farm level productivity. A technology with average % of yield advantage may have wider adaptability, which may result in enhancing the production in larger area. Hence, the development departments may consider these technologies to take up popularization programmes in much larger areas. For further details on individual technologies and the farmers selected for the FLDs, the corresponding Nodal Officers (please see annexure) in the state may be contacted.

S. No	State	Ecosystem	Technologies demonstrated	% Yield Advantage
1.	Andhra Pradesh	Irrigated	Integrated Weed Management	15.55
2.	Assam	Rainfed lowland	CR Dhan 310	32.65
3.	Bihar	Irrigated low land	CR Dhan 909	25.86
4.	Chhattisgarh	Rainfed Shallow Lowlands	IGKV R 1	13.86
5.	Chhattisgarh	Upland	Samleshwari	68.00
6.	Gujarat	Irrigated	GNR-7	15.63
7.	Gujarat	Irrigated	GAR-14	20.27
8.	Himachal Pradesh	Hills	HPR 2880	35.25
9.	Himachal Pradesh	Hills	HPR 2612	32.59
10.	Himachal Pradesh	Hills	HPR 2795	26.09
11.	Himachal Pradesh	Hills	HPR 2656	23.89
12.	Jammu and Kashmir	Hills	Shalimar Rice 5 (for higher altitudes)	24.94
13.	Jammu and Kashmir	Hills	Basmati-564	40.91
14.	Jammu and Kashmir	Hills	SJR-129	52.26
15.	Jharkhand	Rainfed drought prone	Sahbhagi Dhan with DSR	31.25
16.	Jharkhand	Rainfed drought prone	IR 64 Drt.1 with DSR	25.00
17.	Jharkhand	Rainfed drought prone	Abhisekh with DSR	30.00
18.	Jharkhand	Rainfed lowland	BVS-1, IR-64 drt-1, Sahbhagidhan, BVD-110	21.88
19.	Karnataka	Irrigated	Daksha (KMP-175) under aerobic conditions	25.00
20.	Karnataka	Irrigated	B.R.R.I. Dhan-75	37.50
21.	Karnataka	Irrigated	BINA Dhan-17	43.75
22.	Kerala	Irrigated	MO 23 (Pournami)	20.13
23.	Kerala	Low land	'KAU Weed Wiper'	29.17
24.	Kerala	Irrigated	Management of glume discoloration	24.32

Frontline Demonstration on Rice (2019-20)

S. No	State	Ecosystem	Technologies demonstrated	% Yield Advantage
25.	Madhya Pradesh	Irrigated	JRB 1	16.34
26.	Madhya Pradesh	Irrigated	JR 81	18.28
27.	Maharashtra	Rainfed	Sakoli-9	19.72
28.	Maharashtra	Irrigated	Ratnagiri-8	28.29
29.	Manipur	Hills	RCM 13, RCM 7	32.6
30.	Odisha	Irrigated	CR Dhan 206	18.35
31.	Odisha	Irrigated	CR Dhan 304	17.65
32.	Odisha	Irrigated	CR Dhan 306	25.00
33.	Odisha	Irrigated	CR Dhan 601	20.46
34.	Odisha	Rainfed Shallow Lowland	Hasanta	19.78
35.	Tamil Nadu	Irrigated	IPDM with ADT 51	44.90
36.	Tamil Nadu	Irrigated	CO 52	15.99
37.	Tamil Nadu	Irrigated	TKM 13	13.33
38.	Telangana	Irrigated	WGL 44 (Siddhi)	25.00
39.	Telangana	Irrigated	CGZR 2	39.43
40.	Telangana	Irrigated	Protozin	34.29
41.	Telangana	Problem Soils	Sodic soil management	37.20
42.	Uttar Pradesh	Irrigated	Sambha Sub-1/ INM	35.47
43.	Uttar Pradesh	Irrigated	NDR 2101/ New Variety	39.90
44.	Uttar Pradesh	Irrigated	NDR 2101/ INM	42.93
45.	Uttar Pradesh	Irrigated	SHIATS Dhan 1	27.82
46.	Uttarakhand	Irrigated	VL Dhan 68	21.86
47.	West Bengal	Irrigated	Machine Transplanting	25.06
48.	West Bengal	Irrigated	Ajit	37.80
49.	West Bengal	Rainfed Semideep	Improved Variety – Kanak	67.20
50.	West Bengal	Rainfed Shallow Land	Integrated Weed Management	37.50

V. CONCLUSIONS

During the year through this programme, a cafeteria of rice technologies were demonstrated in 852 hectare area covering 20 states and six major rice ecosystems of the country. FLDs organized during this year have been effective in creating the awareness about the potential of new rice varieties, hybrids and other management technologies. In majority of the cases the yield advantages recorded by the FLD technologies were significant.

Out of 852 FLDs reported, about 67.7% were conducted in irrigated rice ecosystem; whereas about 12.56% of FLDs were conducted in rainfed uplands. More than 9% of FLDs were organized in shallow lowlands and 7.98% in hill ecologies. There is a scope to increase the number of FLDs in rainfed and shallow lowland ecologies. The summary statement reveals that the mean yield advantage was the highest in semi deep ecologies (42.46%) followed by Problem Soils/Coastal Saline (30.81%), hills (30.65%). There is a tremendous scope to bridge the yield gaps (particularly Yield gap-II) in case of Rainfed uplands (11.63% mean yield advantage), Shallow lowlands (16.35%) and irrigated ecologies (22.91%). For this, proper extension strategies need to be deployed for large scale adoption of these technologies.

FLD technologies demonstrated in irrigated ecosystems have recorded mean yield of 4.99 t/ha where as in Shallow lowlands FLD technologies have recorded an average yield of 4.84 t/ha. Average demonstration yields in rainfed uplands was 3.84 t/ha. This shows the attainable yield potential in the farmers' fields, which needs to be considered for planning the extension programs in these regions. The range of yield advantages explains that there are few promising technologies, if properly adopted by the farmers may result in enhancing the farm level productivity.

In total 50 promising technologies have been identified from 20 states. These technologies will help either in withstanding abiotic stresses (**Sambha Sub-1 + INM for submergence**, **DRR Dhan 42** for drought tolerance, **Daksha** for aerobic condition), improving the field productivity (**Samleshwari**, **SJR-129**, **BINA Dhan-17**, **Kanak**, **Ajit**, **Ratnagiri-8**, **Shalimar Rice 40**), solving the local problems (Problem soil management, **KAU Weed Wiper**), labour scarcity (Machine transplanting), early harvest for facilitating rabi crops (**Sahbhagi dhan**), better basmati options for farmers (**Basmati 564**), consumer preferences (**RC Maniphou-13**), replacing the popular varieties (**CO 52**, **TKM 13**, **CR Dhan 909**) etc., But a viable strategy should be in place before these promising technologies making a difference in the livelihoods of farmers.

It may be noted that, a technology with highest % yield advantage may not necessarily be a technology that has wider adaptability. In such cases, the % yield advantage may help in enhancing the farm level productivity. A technology with average % of yield advantage may have wider adaptability, which may result in enhancing the production in larger area. Hence, the development departments may consider these technologies to take up popularization programmes in much larger areas. For further details on individual technologies and the farmers selected for the FLDs, the corresponding Nodal Officers (please see annexure) in the state may be contacted.

During this year, monitoring was done across the country in select locations involving a team of IIRR scientists. The monitoring teams have visited FLD sites and interacted with the farmers. Various components such as field boards, list of farmers, performance of technologies, input supply details were verified during these visits.

The new varieties and technologies demonstrated need to be popularized in an extensive way, so as to enhance the productivity and production on a location specific basis. The effectiveness of the FLDs can be enhanced much more through proper planning, expeditious administrative approval, timely release of funds and critical monitoring. The fruits of FLDs can be harnessed on large scale, if proper follow up activities are taken up by the state departments of agriculture.

Of late, there is a general feeling that, focus of FLD programme should be not only on productivity, but also on profitability. The economics of FLD technologies can be effectively captured, if FLD cooperators provide primary data as per the Final Report Proforma (annexure-V). IIRR is making efforts to analyze the time series data of FLD programme for policy advocacy. As a part of this initiative a comprehensive database is developed on FLDs conducted in last two decades and is made available at <http://www.fld.rkmp.co.in>.

LIST OF NODAL OFFICERS

List of officials involved in organizing the FLDs during 2019-20

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Dr. Shaik N. Meera, Principal Scientist, Transfer of Technology and Training Section, IIRR

Dr. S. Arun Kumar, Scientist, Transfer of Technology and Training Section, IIRR

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Frontline Demonstration on Rice (2019-20)

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Frontline Demonstration on Rice (2019-20)

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Frontline Demonstration on Rice (2019-20)

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