INAUGURAL SESSION

Chairman : Dr. D.K.Yadava, ADG(Seeds),ICAR, New Delhi
Chief Guest : Dr. H.S.Gupta, Former Director, IARI, New Delhi
Guest of Honour : Dr. Dinesh Kumar, ADG (FFC), ICAR, New Delhi

The inaugural session of the 54th Annual Rice Research Group Meeting was held in the New Auditorium, National Rice Research Institute, Cuttack on May 31st , 2019 at 10.00 AM, with ICAR Song followed by lighting of the lamp by the dignitaries.

Dr. Himanshu Pathak, Director, ICAR-NRRI welcomed the dignitaries and delegates of AICRIP, seed industry and students. He mentioned about genesis of AICRIP and its contribution towards the service of farming community despite the plethora of challenges of climate change, low income and other issues. He also emphasized on the importance of review and planning of on going activities of AICRIP for development and dissemination of technologies.

Dr. S.R. Voleti, Director, ICAR-IIRR briefly presented the research highlights of AICRIP and IIRR. He thanked the support and cooperation of all the members of AICRIP who contributed to the success of AICRIP for more than five decades.

Dr. D.K. Yadava, ADG (seeds), ICAR, complimented NRRI team for conducting Annual Rice Group meetings first time in NRRI. He underscored the significance of rice crop as one of the most important crops in India with largest area and production. He also highlighted importance of the largest network of AICRIP having 45 funded and more than 100 voluntary centers conducting 939 experiments every year.

He pointed out that the rice research at ICAR is complimented by CRPs on bio-fortification, molecular breeding and Hybrid Rice in addition to high end research projects like C3-C4 and biological nitrogen fixation(BNF). Among the released 1333 rice varieties including 107 hybrids, special mention was made of 13 biofortified varieties, MAS derived varieties *viz.*, PUSA1121, PUSA1509 and PUSA1718. He appreciated the efforts leading to the export of Basmati varieties to the tune of 33000 crores. Though several varieties have been released through AICRIP, the need for varieties addressing challenges like salinity, drought, submergence and short duration varieties was reiterated.

Dr. Yadava lauded the efforts of public sector competing with the private sector in hybrid rice development. New initiatives addressing Genetic gain through BMGF and digitalisation of AICRIP were also mentioned. He cautioned the group about the seed replacement and varietal mismatching of DAC indents. He commended and called for the collective efforts and reorientation of AICRIP to meet the future challenges of rice crop.

Dr. Dinesh Kumar, ADG (FFC) applauded NRRI team conducting 54th ARGM despite the recent Fani cyclone. He pointed out that despite tremendous efforts by scientists under AICRIP system, most of the released varieties did not find place in the National Seed System. He urged that scientists should develop varieties with yield potential of 10-12 tonnes by insulating the varieties with disease and pest resistance for diverse ecologies taking advantage of new scientific tools and techniques.

Publications from NRRI (6), IIRR (5) and CSKHPKV, Malan (2) and two mobile apps were released during the session. A Video presentation on NRRI was also shown.

Dr. H.S. Gupta complimented the tremendous contribution of AICRIP system over 50 years and informed that this AICRIP system was often quoted as an example of efficient research networking. He was concerned that rice productivity of India was abysmally low of 2.5 t/ha compared to countries like China, Vietnam, Indonesia and Bangladesh and 15 to 20 million tonnes of additional rice is required to be produced by 2030. The productivity increase has to come despite adverse climatic conditions, limited water resources and lesser inputs and to meet these challenges, the productivity increase needed to be optimised particularly from eastern region where the productivity is far below the potential level. While appreciating the efforts of rice scientists sustaining the rice production since 1950, he called for the need to relook at the entire rice research system in the country. Hybrid rice program also requires proper attention and adequate financial support . He was very happy about Basmati rice export which alone fetched the country more than 33000 crores in contrast to Government 's spending of more than 75000 crores towards the import of edible oil.

Dr. Gupta further pointed out that major challenges of global warming, climate change and methane emission needed to be addressed and the efforts of extension is to be strengthened. He suggested a possible emulation of National Rice Wheat Consortia (RWC) inline of CG system. He urged for formulation of road map to meet the target production.

The program ended with vote of thanks by Dr. Gururaj Katti, IIRR, Covener, 54th ARGM.

GENERAL SESSION

CROP IMPROVEMENT

Chairman: **Dr HS Gupta, Director (Ex), IARI**
Co-Chairman: **Dr DK Yadav, ADG (Seeds)**
Rapporteurs: **Dr A Anandan, NRRI**
Dr J Aravind, Sr.Scientist, IIRR

The session was chaired by Dr HS Gupta, Director (Ex) IARI, New Delhi and Director General (Ex) BISA, co-chaired by Dr DK Yadav, ADG (Seeds). Dr Gupta initiated the proceedings by paying condolences and remembering Dr SVS Shastri, eminent rice breeder and "Father of AICRIP". Dr SR Voleti, Director, IIRR, Hyderabad presented the Director's report for 2018-19. He mentioned that weather was normal except for a deficit rainfall of 31% and rice production during 2018-19 was estimated to be 115.6 MT. It was also informed that a foreign exchange of Rs 54,000 crores was earned during 2018-19. Shortage of agricultural labour, timely availability of hybrid seeds and farm machinery along with biotic/abiotic stresses were the major problems as identified by 'Production Oriented Survey – 2018" conducted in 15 states and 734 villages. Big data analysis was worked out for spread of bacterial leaf blight on BPT 5204, and neck blast/false smut distribution. During 2018-19, 71 new varieties/hybrids were released through CVRC (33) and SVRC (38), Tripura released 11 varieties. Data receipt was ~92%, 79% and 94% from funded centers, voluntary centers and private companies respectively. During 2018-19, among the 902 entries nominated for testing 219 were found promising. Breeder seed production was 7208 qtls against a DAC indent of 4324 qtls, among the states Madhya Pradesh was the highest producer 16347 qtls. Breeder seed production at IIRR was ~ 162.80 qtls during 2018-19. A total of 12 hybrids were released through CVRC (10) and SVRC (2). A newly identified *Rf* gene located on chromosome 9 linked with SSR marker RM 23958 is under validation for restorer efficiency. Sequencing of the Os8N3 gene from BPT 5204 indicated that it possessed the effector binding element (EBE) of *Xoo* effector PthXo1. Identified poly galacturonase as a key pathogenicity and virulence encoding factor. The adverse effects of RTBV and RTSV infection in photosystem II (PSII) activity of rice were demonstrated. A total of 2584 BILs were developed. Under the nutrient variety trials, 92 entries were tested and several entries for different ecologies were identified including biofortification. About 2-5 times lower weed population and biomass under IPM implemented plots with significantly higher grain yields. Long term fertility trials being conducted with an objective to identify reasons for low productivity. Soil quality analysis and productivity assessment indicated largest yield gap at Chinsurah (51%) and lowest at (16%) at Maruteru. 100% RDF + FYM recorded maximum yield at Mandya and Titabar and on par to RDF at Maruteru. Several promising entries have been identified for soil acidity and nutritional constraints. Application of silicon resulted in >9% increase in mean grain yield. Distortions were observed in seed production under high temperature conditions

upto F6. Under low-light treatment significant yield loss were recorded and entries suffered >35% reduction in grain yield. IET 26487, IET 26493, BPT 2782, Karjat7 and Lalat were identified for their multiple abiotic stress tolerance. Octanoic acid content was high in both high temperature and control in Shabhagidhan (susceptible) while it was in negligible amount in HT for tolerant samples. IIRR geoportal was developed using open source technologies and "Electronic Crop (E-Crop)" model developed by ICAR-CTCRI has been analysed for suitability to rice crop. More than 70 entries have been identified to be promising for different pest tolerance. The newer insecticides Spinetoram + methoxyfenozide or triflumezopyrim were found compatible with the recommended fungicides, hexaconazole and tricyclazole. Several botanicals were found to be effective against stem borer, gall midge and other pests. Three genetic stocks - RP Bio4918-230S (INGR 18002), RP5449-RIL-320-(INGR-17066) and RP 5448-RIL-501 of rice (INGR 16001) were registered. Identified a new Bph tolerance gene (33t gene). Two lines with multiple pest tolerance were identified. EPN Isolate DRR-EPN1 is now authentically identified as *Metarhabditis amsactae syn. Oscheius amsactae.* Several entries were identified from different NSN nurseries with multiple disease tolerance. New combinations of fungicides were identified suitable for control of leaf blast, neck blast, sheath blight and brown spot. Total of 870 FLD were conducted and an yield advantage of 22.63% was realized. Several interventions (like ISM and DRR Dhan 45) were undertaken. Monitoring of AICRIP trials was conducted by teams from both IIRR and NRRI, 63 centers monitored. A total of 78 publications with a citation of 1.6 per publication. Ten publications had a score more than 10.

Some constraints faced by AICRIP were explained including (i) Frequent transfer of scientists by SAU's and DOA which greatly hamper the work (ii) Lack of importance given to AICRIP trials (iii) Poor quality of data and non conformation to instructions in conducting trials (iv) Some centres are not yet using AICRIP on-line MIS for uploading data (v) Lack of centers for quality analysis. AICRIP scientists also to focus on enhancing not only production but profitability as well to retain rice farmers in the sector. Greater emphasis on climate resilient rice is needed. The Director, IIRR requested for budget increase. Dr DK Yadav complimented Director, IIRR and team IIRR for their significant contributions both in AICRIP and lead research during 2018-19. Regarding the failure of AICRIP, the Co-Chairman was of the opinion that failure is not acceptable except under unforeseen situations. He also informed that center re-orientation is to be based on performance. He also requested the co-operators that data management has to be done carefully as precious material would be lost if not done properly. He asked the researcher to come up with newer version of older popular varieties with good quality, yield and resistance. He also stressed that from henceforth the transfer of scientist from AICRIP could require the council (AICRIP) permission. He also appreciated the efforts made by IIRR with regards to C4, NUE and resistance related work. VIC promotions to be based on zonal system. TSP/NSP schemes need to be relooked in terms of financial spending. Dr Yadav suggested that farmer's participatory seed production with prior

permission from council could be taken up. Finally, he once again congratulated the IIRR team.

The Chairman thanked Dr DK Yadav for his critical observations and suggestions. Dr Gupta appreciated the work being carried out by IIRR and AICRIP especially with regards to the release of varieties and hybrids. He suggested that methods are to be devised so that outstanding entries are not missed out in the trials. Genotypes with wider adaptability to be identified so that there is increase in CVRC release. With regards to C4 based research, IIRR should explore the possibility of collaboration with universities and other institutes. He suggested that identifying means to increase the NUE is critical. The breeders should be utilizing the multiple pest/disease tolerant lines in their breeding programs. Another important suggestion by the Chairman was the de-notification of older varieties and ready availability of its substitute. He requested that FLDs should be conducted and monitored faithfully. He also suggested a group meeting involving Dr DK Yadav and Dr SR Voleti to discuss about the problems of cooperators.travel grant to be increase. Vote of thanks was proposed by Dr JN Reddy.

The Director, IIRR report was followed by AICRIP – PI presentation, this session was chaired by Dr DK Yadav and Co-Chaired by Dr Dinesh Kumar, ADG (FFC) (A). A total of 49 breeding trials including 45 plant breeding and 4 hybrid trials were conducted. Overall, 1091 entries were tested and the data receipt was 78.9%. Under the rainfed upland trials under severe drought conditions, three entries (IET 26337 in AVT 1 EDS and IET 27530 and 27513 in IVT – EDS) were found promising whereas under moderate drought several entries showed yield superiority. For the rainfed lowland ecosystem, under AVT 1 – RSL (IET 26692), and AVT 1 SDW (IET 25912) one entry each was promoted. Under IVT RSL and IVT SDW several entries are promoted but, in SDW, several entries were also dropped due to dwarf stature. Under AVT 1 ETP, IET 25713 was found promising for Jharkhand. In IVT-ETP, 11 entries had the yield advantage but were shifted to either IME or IM based on DFF. Under AVT 2 – IME, eight entries were promising for different states. In IVT 6 entries had required yield advantage over the best varietal check but with DFF beyond the IME duration-shifted. IET 27774 was dropped due to mixtures observed during monitoring in 10 out of 15 centres. In AVT 2 – IM, IET 25785 and 26027 were found promising while in AVT – IM, only IET 26118 and 26086 were promoted. In case of IVT – IM, only IET 27705 along with several entries in different zones were promoted. A total of 13 entries were promoted in AVT 1 L. In Boro ecology, three entries were promoted in IVT and AVT1 and none were found promising. In aerobic trials, though entries IET 27239 and 27240 were superior yielders in AVT 1, they were dropped based on unacceptable quality. Four entries were found promising in AVT2 – Aerobic. In AVT 1 – Biofort, IET 26383 was found promising for Zone II and Zone VII. Three hybdris and two varieties were found promising in AVT 2 – MS and one hybrid (IET 25802) would be retested in Zones IV and VI. Several ASG entries were dropped based on quality but several entries were promoted in IVT-Basmati. In IVT - AL & ISTVT, IVT CSTVT, AVT 1 _CSTVT, 4, 10 and 1 entry were promoted respectively. IET 26744, a NIL of Pooja was promoted. Under AVT 1 – NIL (Drt), none were promoted.

AVT-1-NIL-CS is suggested for repetition as the NILs are not tested under normal for confirmation of NILs. A total of 7204.33 qtl of breeder seed of 262 varieties was produced. Madhya Pradesh followed by Andhra Pradesh, Odisha and Uttar Pradesh were leading states in BSP.

Twelve hybrids were released during 2018 (10 CVRC and 2 SVRC) and several hybrids have been identified to be pipeline for different ecologies. The PI, hybrid rice requested for an increase in testing centers specifically in Zone II, IV and V. overall, 114 hybrids were evaluated in 2018. In early trials, one hybrid in AVT 2, three each in AVT 1 and IVT were found promising. Several hybrids were found promising in AVT2 Early/Medium/MS and IHRT. But, only hybrid was promising in AVT 2 L and IHRT L. Two hybrids in basmati and six under aerobic were found promising.

The Chairman thanked the speakers for the effective presentations and congratulated them and their respective teams. He suggested that a slide each for criteria for promotion and action taken report to be presented by the PIs. Dr AK Singh gave several useful suggestions: (i) artificial inoculation data to be considered for promotion (ii) the deleted NIL entries to be retested in separate screening nurseries only if they are dropped on reasons other than quality in gazette notified and package of practice expanded areas (iii) NIL (Drt) trial should generate 2-3 data points under rain-out shelter (iv) promotions to be based on at least 3 center data (v) introgressed genes to be verified at IIRR prior to their testing in trials (vi) NILs to be included in regular trials under normal conditions but in case of stress based NILs a separate trial to be constituted. Dr. Dinesh Kumar opined that the management and conduct of trials should be improved, reviewing of centers to be taken up and dropping of entries based on segregation. Finally, a vote of thanks was proposed.

GENERAL SESSION

CROP PRODUCTION

Chairman : Dr.N.P. Singh
Co-Chairman: Dr.R.Ilangovan
Rapporteurs : Dr.Upendra Kumar
Dr.Mangal Deep Tuti

The session was chaired by Dr. N.P. Singh**,** Director, ICAR-NIASM, Baramati and Co-Chaired by Dr. R. Ilangovan, Professor, KAU, Pattambi. Drs. S Saha and A Poonam, Principal Scientists, ICAR-NRRI, Cuttack were convenors of this session. Dr. Mangal Deep Tuti, Senior Scientist (Agronomy), ICAR-IIRR, Hyderabad and Dr. Upendra Kumar, Scientist (Microbiology), ICAR-NRRI were Rapporteurs.

At the outset, the Chairman welcomed all the delegates and called upon the respective Principal Investigators to present the progress report for the year 2018.

AGRONOMY

Dr. R. Mahender Kumar, Principal Investigator summarized the results of 210 experiments conducted at 44 locations.

- IET-25121, IET-26356, IET-25746, IET-26027, IET-25997, IET-25785, IET-25269, IET-26263, IET-25793, IET-25856, IET-22836, IET-25059, IET-26168, IET-26383, IET-26375 were found promising under NVT trials of different ecologies.
- Grain yield across the locations revealed that mechanical transplanting resulted in the highest grain yield (5.63 t/ha) followed by manual transplanting (5.21 t/ha) and SRI (5.06 t/ha).
- 150% RDF in *kharif* season followed by 100% RDF in *rabi* season found to be the optimum fertilizer schedule irrespective of crop based establishment methods.
- Cost of cultivation under flooding was higher across all the locations from Rs. 33443 to Rs. 45850/- and there was a saving of Rs. 3800/- per ha at Mandya under alternate wetting and drying over flooding. Similarly input water also saved to the tune of 70 cm/ha.
- An increase of 11% grain yield due to iron coating of seeds in direct seeded rice situation was reported across the test locations.
- Under late planting condition higher dose of fertilizer (125% of RDF) and closer spacing gave significantly higher grain yield of Rice.
- IWM showed grain yield advantage in IPM implemented plots by 45% at Malan and 6% at Nagina.
- The systemic post emergence herbicide thiobencarb @ 5 l/ha was found promising with higher weed control efficiency and on par with standard post emergence herbicide bispyribac sodium @ 300 l/ha

- Rice-pulse system was promising these two at Ragolu and Chinsurah. Pre kharif pulse increased grain yield over rice-rice system at locations.

During interaction, the Chairman suggested that root study for direct seeded rice is one of the important aspects; hence, it should be studied using *phenomics* facility available at NIASM, Baramati or other research centres. He also emphasized to develop more water saving technologies. Besides, Co-Chairman urged *Argronomists* to do research on core-agronomy to bring a robust/ wholesome package of practices rather than playing a subsidiary role.

SOIL SCIENCE

Dr. K. Surekha, Principal Investigator (Soil Science) presented the results of 7 experiments conducted at 17 locations during2018.

- RDF + FYM and RDF were superior and on par at MTU in both seasons and in *kharif* at Titabar. RDF + FYM was superior to RDF at Titabar in *rabi*. FYM alone was on par to RDF in *Kharif* at Mandya and Titabar.
- Supplementary use/ complete organic manuring improved soil fertility status compared to RDF and significant reduction in available NPK in omission plots compared to RDF at all 3 locations (Titabar, Mandya and Maruteru)
- Considerable variation in rice productivity and soil quality index were observed in farmers' fields but no correlation was found between them.
- Mean yield gap between low and high yielders at selected sites indicated maximum (51%) gap at Chinsurah and minimum at Maruteru (16%) and fertilizer recommendations were given for target yields at different locations.
- Gypsum application in conjunction with NPK fertilization improved rice yields at Kanpur and Mandya by 65- 127% and 7- 15%, respectively. Liming increased yields at all three centers by 15%, 9- 19% and 17% at Ranchi, Raipur, Titabar, respectively. IIRR varieties viz., DRR dhan 40, 41, 42, 45 and 46 performed well under sodic soil conditions and US- 312, Binadhan 8, Binadhan- 75 and Maheshwari were found promising under acid soil conditions.
- For yield maximization of Rice, out of 56 farmers' sites, nutrient expert recorded highest grain yield at 38 sites , RDF 16 sites and FFP at 2 sites. N and K doses were higher and P dose was less as per NA in most locations than RDF and this higher dose resulted in significant yield increase in these locations.
- Bio Intensive Pest Management (BIPM) in organic farming recorded slightly higher yield at 2 (Chinsura and Titabar) at 4 locations, (by 17- 48%).
- In the residue management trial, across the centers, RDF resulted in highest grain yield while combined application of green manuring (GM) or vermicomposting (VC) with residues had superior yield than residues alone. Also nitrogen use efficiency (NUE) was found to be higher with residue compared to other treatments.

Chairman and Co-Chairman appreciated the PI for presenting a valuable data. They urged that soil management practices is equally important with improvement programme.

PLANT PHYSIOLOGY

Dr. D. Subramanyam, Principal Investigator (Plant Physiology) presented the results of 48 trials conducted at 16 locations in the year 2018.

- Application of silica (0.8% Silixol) resulted in >9% increase in mean grain yield tested in all locations irrespective of rice varieties. The mean grain yield was reduced by >20% over control (water stress). Minimum and maximum yield losses were observed in KRH4 and Sahbhagi Dhan, respectively.
- Govind, IET 27514, IET27522, IET27515 were found to be drought tolerant and suitable for rainfed cultivation.
- IET 26780 and IET 25713 showed <15% yield reduction under mean elevated temperature (37.5 °C)) compared to mean ambient control (31.5 °C).
- IET 26487, IET26493, BPT2782, Karjat 7 and Lalat were identified as promising for multiple abiotic stress.
- Varadhan x BPT 5204/10 and Sampada x Jaya 3 gave the highest grain yield averaged across the locations under 0 kg N and 50 kg N, respectively. Sampada x Jaya 3, Varadhan x MTU 1010/2 and Rasi x Jaya/2 was less affected by environment.
- Rice varieties grown at NRRI, Cuttack, Raipur and Pantnagar showed >50% yield reduction under low light condition. Reduction of grain yield was highest in IET 27543.

Chairman appreciated the PI for presenting valuable data and suggested to emphasize to use phenomics facilities of ICAR-NIASM, Baramati to analyze root morphology and other traits under abiotic stress. He also expressed his concern to include more centres to conduct abiotic related physiological trials.

FRONTLINE DEMOSTRATIONS (FLDs)

Dr. Shaik N. Meera, Principal Scientist and Coordinator, presented the results of FLD programme for the year 2018-19. He reported that FLDs were conducted during 2018-19 and mainly focussed on improving field productivity (52.3%), abiotic stress (16.3%), solving local problems (11.6%), labour scarcity (8.1%), biotic stress (7%), consumer preferences (2.3%), early harvest for facilitating rabi crop (1.2%) and nutritional security (1.2%).

Out of 870 FLDs reported, about 67.59% were conducted in irrigated rice ecosystem; whereas about 6.90% of FLDs were conducted in rainfed uplands. More than 16.90% of FLDs were organized in shallow lowlands and 6.32% in hill ecologies. There is a scope to increase the number of FLDs in rainfed ecologies. The summary statement reveals that the mean yield advantage was the highest in rainfed ecologies (37.28%). There is a tremendous scope to bridge the yield gaps (particularly Yield gap-II) in case of Rainfed uplands, irrigated ecologies (18.03%) and Shallow lowlands (18.43%). For this, proper extension strategies need to be deployed for large scale adoption of these technologies.

In total 50 technologies have been identified from 18 states. The criteria adopted to identify these technologies are relative yield advantages over the existing technologies and the kind of local problem, the technology tried to address.

These technologies will help either in withstanding abiotic stresses (such as submergence - Samba Sub-1), improving the field productivity (Naveen, Swarna Shreya, JRH-5, Shiats Dhan -1), solving the local problems (Problem soil management, Indira Aerobic -1), labour scarcity (Demonstrations of Paddy Thresher, mechanical transplanting), early harvest for facilitating rabi crops (CO 51 and Sahbhagi dhan), better basmati options for farmers (Pusa 1509 and Basmati 564), consumer preferences (RC Maniphou-13, RNR 15048, Gangavathi Sona), replacing the popular varieties (CO 51, Tripura Chikan Dhan, CR Dhan 909) etc., But a viable strategy should be in place before these promising technologies making a difference in the livelihoods of farmers.

The Chairman and Co-Chairman suggested that the best technologies recommended in a particular region may be showcased to local leaders, state officials, bureaucrats etc so that they themselves popularize these technologies and also emphasized that these technologies must be portrayed in local language to end-users.

RICE EXPERIMENTAL DATABASE (http://www.aicrip-intranet.in)

Dr. B. Sailaja, Principal Scientist, presented a new user friendly interface called as Rice Experimental Database (http://www.aicrip-intranet.in) to create a data base of AICRIP. Data available in this web portal are cooperators data as per registration, newly planned trials, allotment of trials to all locations as per star sheet, seed dispatch details, experimental designs and parameters of each trial. Similarly data required from all cooperators are trial indent, seed received confirmation, crop condition details, weather data, trial information, RBD/Split download and upload data sheets, screening pest/disease download and upload data sheets.

Chairman emphasized to make it compulsory to get the data from all locations through this web portal. Co-Chairman suggested, collection of data should be in very simple manner and making it user friendly just like a mobile app.

GENERAL SESSION

CROP PROTECTION

Chairman: Dr. Mayabini Jena
Co-Chairman: Dr Dipankar Maiti
Rapporteurs: Dr D Krishnaveni
Dr Arup K Mukherjee

The general session on Plant Protection was held on 31st May 2019 under the chairmanship of Dr Mayabini Jena, Emeritus Scientist, Crop Protection, NRRI and Co-chaired by Dr D. Maiti, CRURRS (ICAR-NRRI), Hazaribagh. At the outset, The Chairperson welcomed the delegates and expressed that this session will bring fruitful points from discussions after presentation by the speakers.

Dr. Gururaj Katti, Principal Investigator and Head, Entomology IIRR, Hyderabad presented the results of major Entomology trials conducted during 2018. He highlighted the scenario of different insect pests all over India. It was reported intervention of IPM and ecological engineering increased the beneficial insect population. However emergence of few new insect pests was of a matter of concern. Dr Katti highlighted that PTB-33 and RP 2068-18-3-5 performed constantly well against BPH across India. He presented the results of coordinated Entomology trials conducted during *Kharif* 2018, involving seven major trials and 312 experiments that were conducted at 41 locations (32 funded + 9 voluntary) in 22 states and one union territory with emphasis on host plant resistance, insect biotype studies, chemical control studies, ecological studies, bio-control and biodiversity studies and monitoring pest population through light traps. He briefed on the real time pest surveys reporting severe pest damage by BPH, stem borer and swarming caterpillar in many parts of the country.

In the host plant resistance trials 1661 entries were evaluated against 12 insect pests in 213 valid tests (46 greenhouse reactions +167 field reactions). The results revealed that 16 breeding lines *viz*., BPT 2601, CB 15569, CB 15144, MTU 1303, MTU 1305, MTU 1306, MTU 1307, MTU 1308, MTU 1309, WGL 1250. WGL 1319, WGL 1320, RNR 19416, RP 5995 Bphk17-5, IR 73382-80-9-3-13-2-2-1-3-B (HWR-16) and RP 5690-20-6-3-2-1; four germplasm accessions viz., IC 216735, IC 76013, IC 75975 and IC 76057 were promising for two hoppers. In gall midge screening trial (GMS), 9 lines were promising. In Gall midge special screening trial (GMSS), RP 5925 and 13 other pyramided lines were promising in 6-7 tests. Aganni was promising in 8 tests and W1263 in 6 tests. The source of resistance in the promising gene pyramided lines was either *Gm4 or Gm8 genes or both.* In Leaf folder screening trial (LFST) 11 entries were promising including HWR 24, MSM 139, NEG 186, HPR 2613 and HWR 3 were promising. In Stem borer screening trial (SBST), 16 entries viz., JGL 32467, JGL 32485, BK 39-179, JGL 33080, JGL 33124, JGL 34508, RP 5587-B-B-B-209, RP 5587-B-B-B-253-2, BK 35-155, JGL 34505, KAUPTB 0627-2-11, KAUPTB 0627-2-14, RP 5587-B-B-B-258-1, RP 5587-B-B-B-262, RP 5588-B-B-B-B-232, JGL 28547 were promising. In Multiple resistance screening trial ((MRST), 2 entries *viz*., BPT 2231 and BPT 2611 were promising in 4 and 6 tests, against 2 pests.

National Screening Nurseries (NSN) comprised of 4 trials *viz*., National Screening Nursery 1(NSN1), National Screening Nursery 2 (NSN2), National Screening Nursery –

Hills (NSN hills) and National Hybrid Screening Nursery (NHSN). In NSN1 two entries *viz.*, IET 27275 and 27284 were promising in 3 valid field tests. In NSN 2 trial, ten entries were found promising. In NSN- Hills trial evaluation of 111 entries resulted in identification of IET 27480 as promising in 3 of the 16 tests against BPH. In NHSN trial constituted with 104 entries IET Nos. 27379 and 27392 were found promising.

Insect biotype studies comprising of three trials 1) Gall midge biotype monitoring trial (GMBT) and 2) Gall midge population monitoring (GMPM) and Planthopper special screening trial (PHSS) were conducted to monitor the virulence pattern of gall midge and brown planthopper populations. In GMBT trial Aganni (*Gm8*), INRC 3021 (*Gm8*) and W1263 (*Gm1*) were promising and the results suggest that the resistance genes *Gm8* and *Gm1* hold promise across gall midge populations. Evaluation of the gene differentials through single female progeny testing in GMPM trial revealed that at Ragolu, Aganni (Gm8) holds promise. The study suggests, low virulence on Aganni at Warangal and W 2163 at Pattambi and increase in virulence in RP 2068-18-3-5 at all the three locations. In Planthopper special screening trial (PHSS) 16 gene differentials with primary sources of resistance were evaluated against brown planthopper and two differentials *viz*., PTB 33 with bph2+Bph3+unknown factors and RP 2068-18-3-5 with Bph33(t) gene were promising in 8 and 9 tests.

Pesticide Compatibility Trial (PCT) was carried out with the objective of evaluating the compatibility of newer insecticide and fungicide formulations as tank mix against major insect pests and diseases of rice and consequent impact on grain yield, at 27 centres. Spinetoram+methoxyfenozide performed better against stem borer and leaf folder, while triflumezopyrim showed superiority against plant and leafhoppers. The results revealed that there was no adverse impact on the efficacy of either of the insecticides when applied with fungicides or vice versa. Botanical Insecticide Evaluation Trial (BIET) was carried out at 24 locations to evaluate the efficacy of four essential oils, neemazal and recommended insecticides, dinotefuran and rynaxypyr against major insect pests of rice and the results reveal that the botanicals, eucalyptus oil and neemazal were effective in reducing damage by stem borer. Cedar wood oil showed efficacy in controlling gall midge damage.

Ecological studies consisted of Effect of planting dates on insect pest incidence (EPDP) conducted at 21 locations which indicated that pest incidence was more in late planting compared to early and normal planting. Biocontrol and Biodiversity studies covered i) Ecological Engineering for Planthopper Management (EEPM) ii) Bio-intensive Integrated Pest management(BIPM) and iii) Monitoring of Pest species and their natural enemies (MPNE). Ecological engineering for pest management was taken up in six locations and the results indicated that ecological engineering can significantly reduce hoper population, increased natural enemy populations and benefit cost ratio was higher with ecological engineering. Bio intensive pest management trial was conducted at 10 locations and results indicated that the pest incidence was reduced and natural enemies and yields were higher in BIPM.

Integrated Pest Management studies included two trials *viz.*, i) Yield loss estimation trial (YLET) and ii) Integrated pest management special (IPMs). Yield loss estimation trial (YLET) was conducted at 5 locations for stemborer, 3 locations for leaf folder and one location for rice hispa. Validation of yield loss estimation model for stem borer was done by regressing observed vs predicted yield losses caused by white ear damage. A significant negative relationship was observed between leaf folder damaged leaves and

grain yield; hispa damaged leaves and grain yield. Integrated Pest Management special (IPMs) trial was conducted at 15 locations involving 31 farmers' in a participatory mode across the Country with an objective of managing insects, diseases and weeds in a holistic way. In general, the disease progression was slow in IPM fields compared to farmer practices. Weed population and weed biomass recorded at all the locations were considerably reduced by two to five times in IPM implemented plots compared to farmer practices resulting in higher grain yields. Grain yields were high in IPM fields compared to farmer practices at all the locations. High returns and low cost of cultivation resulted in high BC ratio in IPM implemented farmers' fields.

Assessment of insect populations throughout the year using light traps revealed that, stem borers and planthoppers continued to be the most important pests in terms of numbers and spread across the locations.

Dr. D. Krishnaveni, Principal Scientist presented the results of coordinated Plant Pathology trials conducted during *Kharif,* 2018. In her report she highlighted about the changing disease scenario across India. Severe leaf blast was observed in Nellore, AP during 2018. A total of 14 trials were conducted at 49 locations on host plant resistance, field monitoring of virulence of blast and bacterial leaf blight and disease management methods. A total of 14 trials were conducted at 49 locations on host plant resistance, field monitoring of virulence of major pathogens and disease management methods.

Host plant resistance studies comprising of 5 national nurseries with 1418 entries of advanced breeding lines, new rice hybrids were evaluated for their reactions against major rice diseases at various locations. In various screening nurseries, many of test entries were showing resistance against more than two major diseases. The promising cultures in NSN-1, IET # 28014 and 28015 recorded resistant reaction against NB and moderate resistance to BLB. Similarly IET # 26027 and 27077 had shown moderate resistance to BLB and ShR. In addition, IET # 27094 (BS, ShR), 27280 (BLB, Sheath rot), 28020 (NB, RTD), 25618 (LB, ShR) also expressed moderate resistance against two different diseases. In NSN-2, IET # 27579 had shown moderate resistance to three diseases *viz*., sheath rot, bacterial leaf blight and brown spot. In addition, IET # 27668 (LB, NB), 27781 (NB, BLB), 27747 (LB, BS) and 27806 (BLB, BS) expressed moderate resistance against two diseases. Under NSN-H, some lines expressed resistant reaction to more than two diseases *viz*., IET # 25826 (moderately resistant to LB, NB and ShR), 26576 (moderately resistant to NB, ShR and BS), IET # 26594 (moderately resistant to NB, ShR and BLB), IET # 27461 (moderately resistant to NB, BLB and resistant to sheath ShR), IET # 27466 (moderately resistant to LB, BLB and BS), IET # 27467(moderately resistant to LB, BS and RTD). In NHSN, IET # 27378 showed resistant reactions to four diseases (resistant to NB and moderately resistant to ShR, BLB and BS). Entries recorded resistant / moderate resistant reactions against three diseases were IET # 27333 (moderately resistant to ShR, BLB and BS), 27377 (moderately resistant to LB and BS and resistant to RTD) and 27389 (resistant to NB and moderately resistant to BLB and BS). In DSN, CB14161 and NWGR-11048 (moderate resistant to NB, ShR and resistance to RTD) and RNR-11450 (moderate resistant to NB, ShR and BS) showed resistant reaction to three diseases.

Results of field monitoring of virulence of *Pyricularia grisea* revealed a major shift in pathogen profile structure at many locations. The reaction pattern of 25 genotypes at all the locations was grouped into eight major groups at 60 per cent similarity

coefficient. The reaction pattern at Almora, NRRI, Ghaghraghat, Imphal, Coimbatore, Upper Shillong, Mandya, Lonavla, Jagadalpur, New Delhi, Ponnampet, Gudalur, Nellore and Malan were in group one; Gangavati, Karjat, Hazaribagh and Jagadalpur were in group two, three, four and five respectively; IIRR and Navasari are in group six; Nawagam and Pattambi are in group seven and Khudwani in group Eight. Field monitoring of virulence of bacterial leaf blight trial consisted of twenty eight near isogenic lines (IRBB lines) possessing different bacterial blight resistant genes (singly) or various combination 5 BB resistance genes *viz*., *Xa4, xa5, Xa7, xa13* and *Xa21* in the background of rice cultivar IR 24 and different checks like Improved Samba Mahsuri, TN1 and DV85. Most of the differentials possessing single bacterial blight resistance genes like *Xa1, Xa3, Xa4, xa5, Xa7, xa8, Xa10, Xa11* and *Xa14* were susceptible at many of the locations. The differential, IRBB 55 possessing two BB resistance genes *xa13* and *Xa21* showed susceptibility at 11 hot spot locations. Based on their virulence, the isolates were grouped into high, moderate and low virulence groups.

The data on the disease observation nursery revealed that terminal percent disease index severity of leaf blast, neck blast, brown spot, sheath blight, sheath rot, false smut and bacterial leaf blight diseases were recorded. Normal sown crop recorded high disease severity of bacterial leaf blight compared to early and late sown crop. With respect to sheath blight, disease progress was high both in the early and normal sown crop. Neck blast was severe in the normal sown crop at Maruteru and Moncompu. Analysis of weather factors inferred that the amount of rainfall directly influenced the disease incidence of neck blast and sheath blight.

Under disease management trials test fungicides were evaluated against leaf blast (10 locations), neck blast (8 locations), node blast (1location), sheath blight (15 locations), sheath rot (7 locations), brown spot (6 locations) and false smut (1 location). The combination product is trifloxystrobin 25% + tebuconazole 50% WG (0.4g/l) was found effective in minimizing the leaf blast, neck blast and sheath rot severity and incidence. Regarding grain yield, both these combination products were performed better than other fungicides in improving the yield. The combination fungicide azoxystrobin 18.2 % w/w + difenoconazole 11.4 % w/w SC (1.0 ml/l) was found effective in minimizing the disease severity and incidence of sheath blight and sheath rot. Two other fungicides viz., mancozeb 50% + carbendazim 25% WS (30.5%) and Flusilazole 12.5% + carbendazim 25% SC found effective in managing brown spot of rice.

Results on Integrated disease management revealed that treatment T4 (T4 = N1+N2+N3+M5+M6+M8+M9+M10) involving the incorporation of FYM @ 1 kg/m^2, seed treatment with carbendazim (2 g/kg) alone or along with one application of carbendazim (@1 g/m^2) 7 days before uprooting the seedlings and application of DAP @ 108 g/10 m^2, application of muriate of potash (MOP) @ 85 g/10 m^2 in the nursery area followed by the application of FYM (@ 1 kg/m^2 + *Trichoderma* formulation @ 2 g /kg of FYM during land preparation, cultural practices, application of 75% RDF + micronutrient solution @ 0.5 litre /10 m^2 area, one blanket application of cartap hydrochloride @ 10 kg/acre at 15 DAT and propiconazole at booting stage @ 1ml/lt in main field was found to be most effective and consistent in reducing the incidence of leaf blast, neck blast, sheath blight, brown spot and sheath rot and also increasing the grain yield at all the centres.

Integrated disease management trail (special) was conducted with different components both at nursery and main field for the management of sheath blight, neck

blast, brown spot, sheath rot and bacterial leaf blight. Disease severity of various diseases, recorded at weekly intervals was converted in to AUDPC values and compared. The leaf blast and neck blast disease progress was significantly lower in the experimental plots where IPM practices were followed when compared to the farmer practices. At Ludhiana and Titabar sheath blight disease progression was slow when IPM practices were followed compared to non-IPM fields. The sheath rot disease progression was slow in IPM practices as compared to farmer practices at Sakoli. At Ludhiana false smut disease progression was more rapid under farmers practices compared to IPM practices. In general, the trial results indicated that the IPM practices which integrates all the necessary components led to low disease development.

A special trial on essential oils to test their performance against leaf blast, neck blast, sheath blight, bacterial blight, false smut, brown spot was conducted at 14 locations. Two sprays of Clove oil @ 2 ml/l (T6) is performed better in reducing the leaf blast severity, whereas Neem oil @ 2 ml/l (T7) and Cedar wood oil @ 2 ml/l (T3) were effective in reducing both leaf and neck blast disease severity. In case of sheath blight disease, spraying Neem oil @ 2 ml/l (T7), Citronella oil @ 2 ml/l (T1), Cedar wood oil @ 2.0ml/l, Nirgundi oil @ 2.0 ml/l (T4) and Eucalyptus oil @ 2 ml/l (T2) was effective. Application of Eucalyptus oil @ 2 ml/l (T2), Neem oil @ 2.0 ml/l (T7), Nirgundi oil @ 2.0 ml/l (T4) and Cedar wood oil @ 2.0ml/l reduced the bacterial blight to some extent. Citronella @ 2.0 ml/l (T1) and Neem oil @ 2.0 ml/l were effective against brown spot and false smut respectively.

Dr. G.S Laha presented detailed report on Production Oriented Survey , 2018. The Survey was conducted by 17 AICRIP centres, in 15 states of India. A total of 103 scientific staff and 62 officials and technical staffs from different States Department of Agriculture surveyed 111 Districts in 15 States. He presented about the changing scenario of rice cultivation. In his report he emphasized about the mechanization of rice cultivation and focused about creating hiring facilities of machines as done through a scheme “Yantra Dhare” in Karnataka and “Farm Machinery and Tool Bank” in Maharashtra. He reported that the major demand by farmers was timely availability of quality seeds. The survey revealed application of nitrogen in different states at different doses and as urea briquette by some state. As per his report the incidence of diseases and insect pests varied in different states few of them are under alarming condition. Dr. Laha reported panicle twisting/ deformation from Odisha. Irregular and uneven rain fall is the major reason for low yield in few states. The diseases like blast, neck blast, brown spot, sheath blight, sheath rot, false smut and bacterial blight were widespread. There was a severe outbreak of bacterial bight in Nizamabad and Suryapet districts of Telangana. Similarly false smut (in parts of Uttarakhand, Mandi in Himachal Pradesh and Siddharthnagar in UP), sheath blight (in Haryana,Punjab, Karnataka and Chhattishgarh), Neck blast (in Himachal Pradesh, Karnataka and Chhattishgarh) caused severe damage. Among the insect pests, stem borer, leaf folder and BPH were widespread throughout India.

Chairperson Dr. Mayabini Jena congratulated the Plant Protection group for making efforts in identification of resistant varieties and donors to combat the increasing incidence of insect pests and diseases. She also urged to identify the effective pesticides and to study the ecological and biological aspects of pest management. She also suggested Dr Laha to collect information on area under different rice varieties. Dr. SK Dash suggested Dr Krishnaveni to include *boro* trial data in the screening nurseries report. The session ended with vote of thanks by Dr K R Korada.

CONCURRENT SESSION

PLANT PHYSIOLOGY

Chairman : Dr. R.K.Sarkar
Programme Leader : Dr. D.Subrahmanyam
Co-Chairman : Dr. Padmini Swain
Rapporteurs : Dr. P.Raghuveer Rao

The group meeting of Plant Physiologists from different AICRIP centres was held at ICAR-NRRI, Cuttack on 30th May, 2019 under the chairmanship of Dr. R.K.Sarkar Emeritus Scientist, NRRI. Dr. D. Subrahmanyam presented the results of experiments conducted at different centres and thanked all the co-operators for timely submission of the data. Dr. S.R. Voleti, Director, IIRR and Dr. H. Pathak, Director, NRRI visited the group during the discussions and participated in the discussions. They appreciated the work done by the physiology group and advised the group to focus more on identifying important physiological traits for various abiotic stresses. They advised all the co-operators to utilize AICRIP-MIS for sending experimental trial data and suggested that Physiologists should play an active role in conducing appropriate trials in view of the challenges posed by imminent climate change and global warming.

The group also met on 1st June afternoon to formulate the technical programme for the year 2019-20. The session was chaired by Dr. R. K. Sarkar and he appreciated the work being done by the physiologists and suggested that proper methodology which is internationally accepted should be adopted to conduct the multiple abiotic stress trial. After detailed discussion, the research programme was finalized and the methodology being adopted to conduct multiple abiotic stress tolerance is modified as per the suggestions received from the participants. Since Nitrogen use efficiency trial completed 3 years of experimentation, it was recommended to drop this trial. A proposal was made by scientists from NRRI to initiate work on submergence tolerance as it is very important for eastern zone. After detailed discussion it was decided to initiate a new trial on screening for submergence tolerance. The Chairman advised that in Silicon experiment, silicon content should be estimated to correctly interpret the results of the trial. He suggested that NRRI should help in analyzing the samples from other centres also. Detailed technical programme with data sheets will be sent to all the co-operators in due course of time. The genotypes to be included in different trials will be decided in consultation with Plant Breeders of IIRR.

1. Influence of silicon on induced stress tolerance in rice genotypes

Locations: CBT,NRRI, IIRR, KJT, KRK, MTU, PNR, PTB,REWA, Ranchi and TTB (11).

NRRI will help in analyzing the silicon content from the dried samples collected from other centres after harvest.

The treatments are T1. Control (without any silica treatment), T2: Silixol @ 0.6% applied at 4 phenological stages (Tillering, PI, 50% Flowering and grain filling state). T3:

Silixol (+ water stress(WS) imposed during grain filling stage. Varieties: to be decided in consultation with Scientists from Plant Breeding and Hybrid Rice.

2. **Screening for high temperature tolerance: The trail will continue.**
   Locations: CBT, NRRI, CHN, IIRR, MTU, PNR, PTB, REWA and TTB (10).

The entries to be tested will be decided in consultation with the Plant Breeding section.

3. **Screening elite rice cultures for drought tolerance**
   Locations: CBT, NRRI, PTB, REWA, Ranchi and Raipur (6).

The trial will continue without any modifications NRRI will provide check varieties for the trial.

Radiation and Nitrogen use efficiency of promising rice genotypes
This trial will be dropped

4. **Physiological characterization of selected genotypes for multiple abiotic stress tolerance**

Locations: CBT, CHN, CTK, IIRR, KJT, KRK, MTU, PNR, PTB, PUSA, RWA and TTB (11).
1. Anaerobic germination
2. Salinity
3. Drought.
4. Low temperature

All the experiments will be conducted in laboratory and subjected to stress treatments individually at seedling stage only. The same set of genotypes will be taken under normal field for physiological characterization. New entries from physiology experiments will be included.

5. **Screening of Rice varieties for tolerance to low-light stress.**
   Locations: IIRR, NRRI, KJT, MTU, PNR, TTB and Raipur (7).
   The trial will be continued, Check variety will be provided by NRRI.

6. **Evaluation of elite germplasm for submergence tolerance**

   Locations: CBT, NRRI, PTB, FZB and TTB (5)

A new trial was proposed by scientists from NRRI and TTB to screen elite rice cultures for submergence tolerance as this abiotic stress is very important for eastern India. The technical programme to conduct the trial was discussed and the facilities developed at NRRI was shown to all the co-operators and after through discussion it was decided to conduct the trial from this year at 5 locations. The rice cultures will be provided by NRRI along with detailed instructions and technical programme to conduct the trial. Dr Padmini Swain, Head, Plant Physiology and Biochemistry, NRRI, Cuttack thanked the Co-operators for participating in the deliberations and visiting NRRI.

CONCURRENT SESSION

SOIL SCIENCE

Chairman : Dr. T.J. Ghose
Dr. D. Panda
Program Leader : Dr. K. Surekha
Rapporteurs : Dr. M.B.B. Prasad Babu
Dr. Dibyendu Chatterjee

The Soil Science group comprising of 12 Cooperators, 4 Scientists from ICAR-IIRR and 8 from ICAR-NRRI met on 30 May, 2019 at 10:00 hrs under the Chairmanship of Dr. T.J. Ghose, Principal Scientist, RARS, Titabar to discuss the results of Soil Science Coordinated Programme conducted during 2018-19. At the outset, Chairman welcomed the group and requested Dr. K. Surekha, PI, to present the results. The PI presented the results of a total of 7 experiments consisting of 46 trials conducted at 8 funded and 8 voluntary locations.

Dr Dinesh Kumar, ADG(FFC), ICAR, New Delhi; Dr. H. Pathak, Director, NRRI and Dr. S. R. Voleti, Director, IIRR joined the group and appreciated the work carried out by the cooperators in the conduct of experiments and timely submission of data. Dr. Pathak suggested for the development of methodology for releasing crop production technologies using AICRIP platform. Dr. Voleti suggested to avoid overlapping of programmes particularly with Agronomy. He also requested all the co-operators to utilize AICRIP-MIS for sending experimental trial data. The results presented by the PI were thoroughly discussed.

The group met again on 01st June, 2019 at 14:30 hrs under the Chairmanship of Dr. D. Panda, Former Principal Scientist, Soil Science, ICAR-NRRI. Total 21 participants joined the discussion. After thorough deliberations, the following technical program for the year 2019-20 was finalized.

1. Long term soil fertility management in rice based cropping systems

This trial will be continued and microbial parameters will be studied by NRRI microbiologist.

PSB to be added in addition to Azospirillum in treatment 9B.

Locations (3): Mandya, Maruteru and Titabar

2. Soil quality and productivity assessment for bridging the yield gaps in farmers' fields.

Intervention from scientists was suggested for both high and low yielders.

Locations (7): Raipur, Pusa, Pantnagar, Titabar, Ghagraghat, Karaikal and Jagtial.

3. Screening of germplasm for sodicity in RBCS

This trial is to be restricted to the screening of germplasm only. Plant Physiologists are to be included for studying additional plant parameters.

Locations (3): Pusa, Kanpur and Mandya.

4. Screening of germplasm for tolerance to soil acidity.

This trial too to be restricted to screening of germplasm under limed and unlimed conditions in rainfed/irrigated situation (pH<5.0). Treatment 3 to be discontinued. Plant Physiologists are to be included for studying additional plant parameters.

Locations (5): Titabar, Moncompu, Raipur, Hazaribagh and Dumka.

5. Yield maximization in farmers' fields using Nutrient Expert software: The trial will continue as such for another year.

Locations (8): Puducherry, Khudwani, Pantnagar, Chinsurah, Moncumpu, Mandya, Karaikal and Jagtial.

6. Bio-intensive pest management (BIPM) in rice under organically managed system

To be continued as such.

Locations (2): Chinsurah and Titabar

7. Residue management in rice based cropping systems

The trial is simplified by removing treatment T4, T6 and T8. The treatment T3 is modified to 50% N through crop residue and 50% through urea.

Locations (7): Raipur, Khudwani, Pantnagar, Ghagharaghat, Karaikal, Puducherry and Pusa.

8. A new trial on Screening of rice germplasm for high NUE is initiated.

Locations (8): Titabar, Raipur, Khudwani, Pantnagar, Karaikal, Mandya, Purilia and Pusa.

All the co-operators requested for timely release of funds.

The meeting ended with vote of thanks.

CONCURRENT SESSION

ENTOMOLOGY

Chairman : Dr PC Rath
Co-chairman : Dr SN Tiwari
Special Invitee : Dr Mayabini Jena
Program leader : Dr Gururaj Katti

The Entomology group session was held on 30.05.2019 and there were 50 participants including scientists from cooperating centres, IIRR, NRRI and four private companies' *viz.,* Seed Works, FMC, Coromandel and Tierra Agro.

At the outset, Dr Gururaj Katti, PI of entomology AICRIP program welcomed the entomology co-operators and Chairman and Co-chairman. He informed about EFC to be submitted for 2020-2024. He asked each center to have a vision for next five years including one pest that is prevalent in that region and work out a plan with specific objectives for artificial infestation facility and work budget. He also suggested to prepare the progress report of the last 5 years by the AICRIP center, in their EFC proposal.

Chairman, Dr PC Rath welcomed the delegates and said that this is for the first time that the workshop is being conducted at NRRI. Dr SN Tiwari, co-chairman urged scientists to prepare and submit a good work plan. He showed his concern that the materials identified for resistance to various pests by entomologists is not being used by plant breeders in developing a variety.

The session started with the presentations of results of entomology trials conducted during kharif 2018 and rabi 2017-18. Pest survey report was presented by Dr V Jhansilakshmi followed by seven HPR studies and insect biotype studies by Dr AP Padmakumari. Dr B Jhansi Rani presented the results of Pest compatibility studies and botanical insecticide evaluation trial. This was followed by presentation on biocontrol and biodiversity studies by Dr Chitra Shanker. Ecological and IPM studies were presented by Dr Ch Padmavathi followed by light trap studies by Dr V Jhansilakshmi. The presentations were followed by deliberations with active participation of scientists from various co-operating centers.

Dr Mayabini Jena, special invitee suggested the entomologists to maintain precision in screening trials and she said the centres should develop facilities for artificial infestation/ augmentation. She also stressed on the purity of seed material that was sent for screening trials. She also asked to provide codes of materials sent along with the data sheets.

During the discussion, Directors of both NRRI and IIRR participated and put forth their suggestions. Dr. H. Pathak, Director NRRI welcomed the delegates and informed that this is a historic moment for NRRI as 54th ARGM Rice workshop is being held at this institute from where AICRIP was initiated in 1965. He suggested to have crop production and protection technologies evaluation done in a similar way that of varieties. He urged to have a good mechanism to evaluate, review, monitor and release

these technologies so that scientists get due recognition and technology reaches farmers for adoption through state departments.

Dr. S. R. Voleti, Director, IIRR appreciated the work done by entomology group and urged to document the large data available on pests and utilize it for publications. He also suggested to look into POS data for working out pest distribution and prediction. He also suggested that emphasis may be given to evaluation of resistance and identification of causes for breakdown of resistance. Dr. Voleti further urged entomology co-operators to give proposals for strengthening facilities to be developed at each centre in EFC memo for the period of 2020-24.

In the concluding remarks, Dr. Mayabini Jena congratulated the IIRR for their team work and appreciated the screening work being done in HPR studies and emphasised on the significance of resistance breeding program as it is both sustainable and eco-friendly. She urged the scientists for more precision and accuracy in their work and reporting of results.

The meeting ended with vote of thanks by Dr Chitra Shanker, PS, Entomology, IIRR.

The Entomology group met again on 1st June 2019 under the Chairmanship of Dr PC Rath, Principal Scientist & Head, Crop Protection division, NRRI, Cuttack. The meeting was attended by 39 participants including entomologists from Co-operating centers, Scientists from IIRR and NRRI. At the outset, Dr G Katti welcomed the participants and initiated discussion on constraints faced by entomology co-operators in conduct of trials. During the discussion, Dr Dinesh Kumar, ADG (FFC), Dr H Pathak, Director NRRI and Dr SR Voleti, Director, IIRR joined the group. Dr G Katti welcomed them and put forth some of the issues raised by the co-operators. The PI requested for strengthening of facilities at the centers and increase in contingency grant in order to improve the efficiency of conduct of trials. As per the request of co-operators, he also emphasised that the department wise split of the contingency grant should be indicated for the smooth functioning and benefit of all the co-operators at each center. Following this, new trials were presented by Dr B Jhansi Rani and Dr Ch Padmavathi.

After thorough deliberations, the group finalized the programme for the year 2019-20 as detailed below:

- Pest Survey reporting will continue on fortnightly basis including online submissions in the provided format.
- All the existing screening and biotype trials *viz.,* Planthopper Screening Trial (PHS), Gall Midge Screening Trial (GMS), Gall Midge Special Screening Trial (GMSS), Stem Borer Screening Trial (SBST), Leaf Folder Screening Trial (LFST), Multiple Resistance Screening Trial (MRST), National Screening Nurseries (NSN1, NSN2, NSNH and NHSN), Planthopper Special Screening Trial (PHSS), Gall Midge Biotype Studies (GMBT) and Gall Midge Population Monitoring trial (GMPM) will continue.
- A new trial on Insecticides and botanicals evaluation trial (IBET) was proposed by Dr B Jhansi Rani.
- Effect of Planting Dates on insect Pest incidence (EPDP) will continue.
- Ecological Engineering for Management of Insect pests (EEMP) trial with observations on all the insect pests and Bio-intensive Pest Management (BIPM) trial will continue.

- Yield Loss Estimation Trial (YLET) was concluded.
- Three new trials on i) Effect of seed coating on insect pest incidence (ESCP), ii) Influence of establishment methods on pest incidence (IEMP) and iii) Cropping systems influence on pest incidence (CSIP) in collaboration with Agronomy were proposed by Dr Ch Padmavathi.
- A new trial on Evaluation of pheromone blends for insect pests of rice (EPBI) was proposed for testing at limited centers.
- Integrated Pest Management special Trial (IPMs) will be continued.
- Population monitoring of insect pests through Light Trap will continue.

The meeting ended with vote of thanks by Dr Ch Padmavathi, PS, Entomology, IIRR.

The details of location wise trials are shown below:

KHARIF 2019

Pest Survey Reports:				**Locations 37**
Aduthurai	Arundhutinagar	Chatha	Chinsurah	Chiplima
Coimbatore	Cuttack	Gangavathi	Ghaghraghat	Jagdalpur
Jagtial	Karaikal	Karjat	Kaul	Khudwani
Ludhiana	Malan	Mandya	Maruteru	Masodha
Moncompu	Navsari	Nawagam	Nellore	New Delhi
Pantnagar	Pattambi	Pusa	R.Nagar	Ragolu
Raipur	Ranchi	Rewa	Sakoli	Titabar
Wangbal	Warangal			

Planthopper Screening Trial				**Locations 14**
Aduthurai	Coimbatore	Cuttack	Gangavathi	IIRR
Jagtial	Ludhiana	Mandya	Maruteru	Nawagam
Pantnagar	R.Nagar	Sakoli	Warangal	

Gall midge Screening Trial				**Locations 13**
Chiplima	Cuttack	IIRR	Jagdalpur	Jagtial
Maruteru	Moncompu	Nellore	Pattambi	Ragolu
Ranchi	Sakoli	Warangal		

Gall midge Special Screening Trial				**Locations 10**
Chiplima	IIRR	Jagdalpur	Jagtial	Moncompu
Pattambi	Ragolu	Ranchi	Sakoli	Warangal

Leaf Folder Screening Trial				**Locations 18**
Bapatla	Chatha	Chinsurah	Cuttack(G)	Gangavathi
IIRR	Jagdalpur	Karaikal	Karjat	Khudwani
Ludhiana	Malan	Masodha	Navsari	Nawagam
Nellore	Pattambi	R.Nagar		

Stem Borer Screening Trial				**Locations 12**
Chinsurah	Coimbatore	Cuttack	Ghaghraghat	IIRR
Malan	Moncompu	Navsari	Pantnagar	Pusa
R.Nagar	Raipur			

Multiple Resistance Screening Trial				**Locations 27**
Chatha	Chinsurah	Chiplima	Coimbatore	Cuttack
Gangavathi	IIRR	Jagdalpur	Khudwani	Ludhiana
Malan	Mandya	Maruteru	Masodha	Navsari
Nawagam	Nellore	Pantnagar	Pattambi	Pusa
R.Nagar	Ragolu	Raipur	Ranchi	Sakoli
Titabar	Warangal			

National Screening Nursery-1				**Locations 18**
Chiplima	Coimbatore	Gangavathi	IIRR	Jagdalpur
Ludhiana	Maruteru	Masodha	Moncompu	Nawagam
Pantnagar	Pusa	R.Nagar	Ragolu	Raipur
Sakoli	Titabar	Warangal		

National Screening Nursery-2				**Locations 14**
Chinsurah	Chiplima	Coimbatore	Gangavathi	Ghaghraghat
IIRR	Jagdalpur	Ludhiana	Malan	Mandya
Maruteru	Moncompu	Navsari	Pantnagar	

National Screening Nurseries(Hills)				**Locations 8**
Chatha	Coimbatore	IIRR	Khudwani	Ludhiana
Malan	Maruteru	Pantnagar		

National Hybrid Screening Nurseries				**Locations 14**
Chinsurah	Coimbatore	Cuttack	IIRR	Ghaghraghat
Ludhiana	Mandya	Maruteru	Moncompu	Nawagam
Pantnagar	Pattambi	R.Nagar	Raipur	

Gall Midge Biotype Trial				**Locations 14**
Chiplima	Cuttack	IIRR	Jagdalpur	Jagtial
Maruteru	Moncompu	Nellore	Pattambi	Ragolu
Raipur	Ranchi	Sakoli	Warangal	

Planthopper Special Screening Trial				**Locations 12**
Aduthurai	Coimbatore	Cuttack	Gangavathi	IIRR
Ludhiana	Mandya	Maruteru	New Delhi	Pantnagar
R.Nagar	Warangal			

Gall midge Population Monitoring Trial **Locations 6**

Jagtial	Moncompu	Pattambi	Ragolu	Sakoli
Warangal				

Insecticide-Botanicals Evaluation Trial **Locations 31**

Arundhutinagar	Bapatla	Chatha	Chinsurah	Chiplima
Coimbatore	Cuttack	Gangavathi	IIRR	Jagdalpur
Karaikal	Karjat	Khudwani	Ludhiana	Malan
Mandya	Maruteru	Masodha	Navsari	Nawagam
Nellore	New Delhi	Pattambi	Pusa	R.Nagar
Ragolu	Raipur	Ranchi	Sakoli	Titabar
Warangal				

Effect of Planting Dates on Pest Incidence **Locations 23**

Arundhutinagar	Bapatla	Chatha	Chinsurah	Chiplima
Gangavathi	Ghaghraghat	Jagdalpur	Karaikal	Karjat
Kaul	Khudwani	Malan	Masodha	Navsari
Nawagam	New Delhi	Pusa	Raipur	Ranchi
Rewa	Sakoli	Titabar		

Effect of Seed coating on Pest Incidence **Locations 6**

Chiplima	Coimbatore	IIRR	Karjat	Maruteru
Raipur				

Influence of Establishment Methods on Pest Incidence **Locations 18**

Aduthurai	Chatha	Chiplima	Coimbatore	Gangavathi
Ludhiana	Mandya	Maruteru	Nawagam	Pantnagar
Raipur	R. Nagar	Ranchi	Jagdalpur	Rewa
Malan	Moncompu	Navsari		

Cropping systems influence on Pest Incidence **Locations 7**

Aduthurai	Maruteru	Karjat	R.nagar	Pantnagar
Jagdalpur	Pattambi			

Evaluation of Pheromone blends for Insect Pests of rice **Locations 14**

1. Leaffolder (8)

Aduthurai	Coimbatore	Pattambi	Jagdalpur	Navsari
Raipur	Sakoli	Titabar		

2. Pink Stem borer(6)

Ludhiana	Pattambi	Ragolu	Jagtial	Raipur
Warangal				

Ecological Engineering for Planthopper Management **Locations 9**

Bapatla	Gangavathi	Karjat	Malan	Mandya
Moncompu	New Delhi	R.Nagar	Warangal	

Integrated Pest Management-Special Trial **Locations 20**

Arundhutinagar	Chatha	Chinsurah	Coimbatore	Cuttack
Gangavathi	Jagdalpur	Karjat	Kurumbapet	Ludhiana
Mandya	Masodha	Nellore	Pantnagar	Pusa
Malan	R.Nagar	Raipur	Sakoli	Titabar

Bio Intensive Pest Management **Locations 13**

Bapatla	Chinsurah	Cuttack(G)	IIRR	Jagdalpur
Karjat	Ludhiana	Masodha	Moncompu	Pattambi
Raipur	Ranchi	Titabar		

Light Trap for Population Dynamics **Locations 30**

Aduthurai	Chatha	Chinsurah	Chiplima	Coimbatore
Gangavathi	Jagdalpur	Jagtial	Karaikal	Karjat
Kaul	Khudwani	Ludhiana	Malan	Mandya
Maruteru	Masodha	Moncompu	Navsari	Nawagam
Nellore	Pantnagar	Pattambi	R.Nagar	Ragolu
Raipur	Rewa	Sakoli	Titabar	Warangal

Rabi 2019-20

Leaf Folder Screening Trial **Locations 1**

Aduthurai

Stem Borer Screening Trial **Locations 7**

Aduthurai	Chinsurah	Cuttack(G)	IIRR	Maruteru
Pattambi	R. Nagar			

Multiple Resistance Screening Trial **Locations 3**

Aduthurai	Maruteru	R. Nagar

Insecticide-Botanicals Evaluation Trial **Locations 12**

Aduthurai	Chinsurah	Chiplima	Coimbatore	Cuttack(G)
Gangavathi	Karjat	Maruteru	Pattambi	Ragolu
Raipur	Titabar			

Effect of Planting Dates on Pest Incidence **Locations 4**

Aduthurai	Chinsurah	Maruteru	Raipur

Ecological Engineering for Planthopper Management **Locations 4**

Aduthurai	Gangavathi	Maruteru	Moncompu

Integrated Pest Management-Special Trial **Locations 7**

Aduthurai	Chinsurah	Gangavathi	Karjat	Maruteru
Pattambi	R.Nagar			

CONCURRENT SESSION

PLANT PATHOLOGY

Chairperson : Dr. Rupankar Bhagawati
Dr. Arup K. Mukherjee
Co-Chairperson : Dr. A. Ramanathan
Group Leader : Dr. G. S. Laha
Rapporteurs : Dr. D. Ladhalakshmi
Dr. V. Prakasam

The Plant Pathology group meeting was held on forenoon of 30th May, 2019 at Godavari Training Hall, Social Sciences Division, ICAR-National Rice Research Institute. The group consisted of 48 participants from different Plant Pathology co-operating centres and private agencies. The session was chaired by Dr. R. Bhagawati, Officer In-Charge and Principal Scientist, NRRI-RRLRRS, Gerua, Assam and co-chaired by Dr. A. Ramanathan, Professor, Plant Pathology, TRRI, Aduthurai (TNAU). In the introductory remarks, Dr. G. S. Laha, I/C Plant Pathology program welcomed the participants and expressed his heartfelt thanks for successfully conducting the trials and timely submitting the data. The session started with the introduction of the participants. Chairman, Dr. R. Bhagawati appreciated all the efforts of Dr. M. Srinivas Prasad, PI, Plant Pathology and his team for bringing out the Plant Pathology report in time and appreciated all the co-operators for good conduct of the trials. He appraised the house regarding the overall rice disease scenario in India and informed about occurrence of bakanae disease in some parts of eastern and north eastern India during Kharif' 2018. He also informed the house that rice tungro disease, which was very common in some parts of Assam, has drastically reduced in recent past. He also emphasized on the use of organic/biological control methods for rice disease management for sustainable rice production. Dr. A. Ramanathan, Co-Chairman of the session also congratulated the co-operators for conducting the trials efficiently and requested to augment the disease pressure through artificial inoculation. He also pointed out use of cutting edge technologies in disease management.

Dr. G. S. Laha presented the consolidated results of host plant resistance on leaf and neck blast, bacterial blight of rice and virulence monitoring of blast and BB pathogen. He stressed on the use of artificial inoculation technique for screening the entries against blast and bacterial blight, even in hot spot locations. House decided that uniform blast nursery should be used for blast screening. He suggested that for artificial screening against bacterial blight, fresh bacterial inoculum should be used. Dr. D. Krishnaveni, Principal Scientist, presented the consolidated reports of brown spot, sheath rot and RTD. She suggested entries against brown spot should be screened at seedling stage for better results. She also suggested planting should be late to get more incidence of sheath rot. She urged the cooperators to take up RTD screening trials wherever the disease is endemic. Dr. C. Kannan, Principal Scientist presented the results of integrated disease management trial. The house felt that the treatments should be simplified for better conduct of the trial. Dr. D. Ladhalakshmi, Senior Scientist presented the reports of

disease observation nursery (DON) and trial on essential oils. House discussed the trial on DON in details and decided that sequential planting of susceptible variety should be done at 15 days interval uniformly in all the locations. Dr. Laha insisted that daily weather data from each centre should be provided for correlating the disease incidence data with weather parameters. Dr. V. Prakasam, Scientist presented the consolidated results of host plant resistance against sheath blight and trial on chemical control against location specific diseases. He suggested that observations on sheath blight reaction should be recorded carefully, strictly following the scale given in the technical program. For chemical management of sheath blight disease, observations should be taken from the artificially inoculated plants only. Co-operators *viz*., Drs. P. K. Tiwari (Raipur), R. K. Gangwar (Nawagam) and Rini Pal (Chiplima) presented the salient findings of the trials conducted at their respective centers.

During the meeting, Dr. S. R. Voleti, Director, IIRR interacted with the participants and congratulated the Plant Pathology team for the excellent conduct of the trials and appreciated the team. He appreciated the co-operators for very good report on production oriented survey. He also announced the increase of contingency amount for conducting POS survey from Rs. 25,000/- to Rs. 40,000/- per centre. He also informed that all the centres should send their requirements to the PI for inclusion in the EFC document. Dr. Himanshu Pathak, Director, ICAR-NRRI also appreciated the group for nice conduct of the trials. He also suggested identifying suitable plant protection technologies and popularizing among the farmers. The house discussed about the possible introduction of new trials on yield loss due to major rice diseases and disease scenario in different rice based cropping system. Dr. J. S. Lore, Ludhiana, Dr. D. Pramesh, Gangavati and Dr. Kalyan Mondal, New Delhi stressed the importance of yield loss trial in climate changing scenario. Dr. N. A. Bhat, Prof. SKUAST-K, Khudwani and Dr. Sachin Upamanya, Scientist, RWRC, Malan requested that ICAR-IIRR should send the seeds early for proper conduct of the trials. The meeting ended with vote of thanks by Dr. C. Kannan.

The group met again at Godavari Training Hall, ICAR-National Rice Research Institute on afternoon of 1st June, 2019 under the chairmanship of Dr. A. K. Mukherjee, Principal Scientist, ICAR-NRRI. The trial on integrated disease management was modified as per the suggestions of the co-operators. Dr. Srikant Lenka, Principal Scientist, NRRI suggested seed treatment with bio-agents as it can induce ISR activity. Individual trials were discussed and the locations for each trial were finalized. Dr. A. K. Mukherjee made a presentation on blast screening procedure under UBN. The house also discussed about the possibility of artificial screening of NSN-1 entries against false smut at selected locations. Dr. Ladhalakshmi presented artificial screening technique developed at ICAR-IIRR can be used for artificial screening of entries against false smut and she can provide any assistance regarding screening. Dr. Ramanathan presented the details of the trials conducted at TNAU, Coimbatore. Dr. S. R. Voleti, Director, IIRR and Dr. Himanshu Pathak interacted with the participants and urged the house to formulate farmers friendly disease management techniques. They also insisted that all the co-operators to submit AICRIP trial data through MIS portal. Dr. Dinesh Kumar, ADG, FFC, ICAR thanked all the participants for good conduct of the trials. Dr Laha mentioned that if the resistance check entries show highly susceptible reaction, the co-operator should isolate and characterize the strain and also send a sample to the ICAR-IIRR for further studies. The meeting ended with vote of thanks by Dr. Manas Bag.

The group has finalized the trials for the year 2019-20 as follows:

Trial 1: Screening for Leaf Blast

NSN 1 (27)

Almora	Bankura	Coimbatore	Gangavati	Gerua
Ghaghraghat	Gudalur	Hazaribagh	IIRR	Jagdalpur
Jagtial	Karjat	Khudwani	Lonavla	Malan
Mandya	Navsari	Nawagam	Nellore	New Delhi
NRRI	Pattambi	Ponnampet	Rajendranagar	Ranchi
Rewa	Umiam			

NSN2 (19)

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Jagdalpur	Jagtial	Malan
Mandya	Nellore	NRRI	Pattambi	Ponnampet
Rajendranagar	Ranchi	Rewa	Umiam	

NSN Hills (8)

Almora	Imphal	Gudalur	Khudwani	Lonavala
Malan	Ponnampet	Umiam		

NHSN (23)

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Imphal/(Lamphalpet)	Jagdalpur	Jagtial
Karjat	Khudwani	Lonavala	Malan	Mandya
Nawagam	Nellore	Pattambi	Ponnampet	Rajendranagar
Ranchi	Rewa	Umiam		

DSN (23)

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Imphal/Lamphalpet	Jagdalpur	Jagtial
Karjat	Lonavala	Malan	Mandya	Nawagam
Nellore	NRRI	Pattambi	Ponnampet	Rajendranagar
Ranchi	Rewa	Umiam		

Trial 2: Screening for Neck Blast

NSN 1 (10)

Bankura	Jagdalpur	Jagtial	Lonavala	Malan
Mandya	Nawagam	Nellore	Ponnampet	Rajendranagar

NSN 2 (5)

Bankura	Jagdalpur	Mandya	Ponnampet	Umiam

NSN Hills (7)

Almora	Imphal/Lamphalpet	Khudwani	Lonavla	Malan
Ponnampet	Umiam			

NHSN (11)

Almora	Bankura	Imphal/Lamphalpet	Jagdalpur	Jagtial
Lonavla	Malan	Mandya	Nawagam	Rajendranagar
Umiam				

DSN (11)

Almora	Bankura	Imphal/Lamphalpet	Jagdalpur	Jagtial
Lonavla	Malan	Mandya	Nawagam	Rajendranagar
Umiam				

Trial 3: Screening for Sheath Blight

NSN 1 (17)

Aduthurai	Bankura	Chinsurah	Chiplima	Faizabad
Gangavati	IIRR	Ludhiana	Mandya	Moncompu
New Delhi	NRRI	Pantnagar	Pattambi	Raipur
Titabar	Varanasi			

NSN 2 (14)

Aduthurai	Bankura	Faizabad	Gangavati	IIRR
Ludhiana	Mandya	Moncompu	NRRI	Pantnagar
Pattambi	Raipur	Titabar	Varanasi	

NSN Hills (3)

IIRR	NRRI	Pantnagar

NHSN (17)

Aduthurai	Arundhutinagar	Bankura	Chinsurah	Faizabad
Gangavati	IIRR	Ludhiana	Mandya	Moncompu
New Delhi	NRRI	Pantnagar	Pattambi	Raipur
Titabar	Varanasi			

DSN (16)

Aduthurai	Bankura	Chiplima	Faizabad	Gangavati
IIRR	Ludhiana	Mandya	Moncompu	New Delhi
NRRI	Pantnagar	Pattambi	Raipur	Titabar
Varanasi				

Trial 4: Screening for Brown Spot

NSN 1 (16)

Bankura	Chatha	Chinsurah	Coimbatore	Gangavati
Ghaghraghat	Gudalur	Hazaribagh	IIRR	Jagdalpur
Khudwani	Lonavla	Ludhiana	Ponnampet	Pusa
Rewa				

NSN 2 (12)

Bankura	Chatha	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	Jagdalpur	Ludhiana	Ponnampet	Pusa
Ranchi	Rewa			

NSN Hills (6)

Almora	Gudalur	Khudwani
Lonavla	Mugad	Ponnampet

NHSN (15)

Almora	Bankura	Chatha	Chinsurah	Coimbatore
Gangavati	Ghaghraghat	Jagdalpur	Hazaribagh	Khudwani
Lonavla	Ludhiana	Mugad	Pusa	Rewa

DSN (14)

Almora	Bankura	Chatha	Coimbatore	Gangavati
Ghaghraghat	Hazaribagh	IIRR	Jagdalpur	Lonavla
Ludhiana	NRRI	Pusa	Rewa	

Trial 5: Screening for Sheath Rot

NSN 1 (12)

Aduthurai	Chinsurah	Cuttack	Karjat	Lonavla
Navsari	Nawagam	Pusa	Raipur	Rajendranagar
Titabar	Umiam			

NSN 2 (4)

Aduthurai	Pusa	Raipur
Umiam		

NSNH (2)

Lonavla	Umiam

NHSN (11)

Chinsurah	Cuttack	Karjat	Lonavla	Navsari
Nawagam	Pusa	Raipur	Rajendranagar	Titabar
Umiam				

DSN (10)

Aduthurai	Cuttack	Karjat	Lonavla	Navsari
Nawagam	Pusa	Raipur	Rajendranagar	Umiam

Trial 6: Screening for Bacterial Leaf Blight

NSN 1 (22)

Aduthurai	Chatha	Chinsurah	Chiplima	Faizabad
Gangavati	Gerua	IIRR	Jagtial	Karjat
Ludhiana	Moncompu	Navsari	Nawagam	Nellore

New Delhi	NRRI	Pantnagar	Pattambi	Raipur
Titabar	Varanasi			

NSN 2 (13)

Aduthurai	Chatha	Faizabad	Gangavati	IIRR
Ludhiana	Moncompu	NRRI	Pantnagar	Pattambi
Raipur	Titabar	Varanasi		

NSN Hills (3)

IIRR	NRRI	Pantnagar

NHSN (19)

Aduthurai	Arundhutinagar	Chatha	Chinsurah	Faizabad
Gangavati	IIRR	Jagtial	Karjat	Ludhiana
Moncompu	Navsari	Nawagam	New Delhi	Pantnagar
Pattambi	Raipur	Titabar	Varanasi	

DSN (20)

Aduthurai	Chatha	Chiplima	Faizabad	Gangavati
Gerua	IIRR	Jagtial	Karjat	Ludhiana
Moncompu	Navsari	Nawagam	New Delhi	NRRI
Pantnagar	Pattambi	Raipur	Titabar	Varanasi

Trial 7: Screening for Rice Tungro Disease

NSN 1(3)

Coimbatore	IIRR	NRRI

NSN 2 (1)

IIRR

NSN-H (2)

Coimbatore	IIRR

NHSN (2)

Coimbatore	IIRR

DSN (3)

Coimbatore	IIRR	NRRI

Trial 8: Field Monitoring of Virulences: *Pyricularia grisea* (25)

Almora	Coimbatore	Gangavati	Gerua	Ghaghraghat
Gudalur	Hazaribagh	IIRR	Imphal (Lamphalpet)	Jagdalpur
Jagtial	Karjat	Khudwani	Lonavla	Malan
Mandya	Navsari	Nawagam	Nellore	New Delhi
NRRI	Pattambi	Ponnampet	Rajendranagar	Ranchi

Trial 9: Field Monitoring of Virulences: *Xanthomonas oryzae* pv. *oryzae* (23)

Aduthurai	Chatha	Chinsurah	Chiplima	Coimbatore
Faizabad	Gangavati	Gerua	IIRR	Jagtial
Karjat	Ludhiana	Moncompu	Navsari	Nawagam
New Delhi	NRRI	Pantnagar	Pattambi	Raipur
Rajendranagar	Sabour	Titabar		

Trial 10: Disease Observation Nursery on Trap crop (9)

Chinsurah	Cuttack	IIRR	Malan	Mandya
Moncompu	Nawagam	Pusa	Raipur	

Trial 11: Evaluation of chemicals for Location Specific Diseases (35)

Aduthurai	Arundhutinagar	Bankura	Chatha	Chinsurah
Chiplima	Coimbatore	Faizabad	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Jagdalpur	Gerua	Khudwani
Lonavla	Ludhiana	Malan	Mandya	Moncompu
Navsari	Nellore	Nawagam	NRRI	Pantnagar
Pattambi	Ponnampet	Pusa	Raipur	Rajendranagar
Ranchi	Rewa	Sabour	Titabar	Varanasi

Trial 12: Integrated Disease Management (17)

Arundhutinagar	Chiplima	Faizabad	Gerua	Hazaribagh
IIRR	Lonavala	Jagdalpur	Malan	Mandya
Moncompu	NRRI	Pantnagar	Pattambi	Ponnampet
Rewa	Titabar			

Trial 13: Special IPM (2)

Malan	Titabar

Trial 14: Special trial on Essential oils (17)

Chinsurah	Chiplima	Mandya	Faizabad	Hazaribagh
IIRR	Karjat	Jagdalpur	Lonavla	Ludhiana
Malan	Nellore	Pantnagar	Pusa	Raipur
Ranchi	Sabour			

PRODUCTION ORIENTED SURVEY (25)

Aduthurai	Chatha	Chinsurah	Coimbatore	Faizabad
Gangavati	Gerua	Ghaghraghat	Hazaribagh	IIRR
Jagtial	Karjat	Khudwani	Ludhiana	Malan
Mandya	Moncompu	Nawagam	New Delhi	NRRI
Pantnagar	Pusa	Raipur	Rajendranagar	Rewa

CONCURRENT SESSION

HYBRID RICE

Chairman : Dr. M.S. Ramesha
Program Leader : Dr. A.S. Hari Prasad
Rapporterus : Dr. P. Senguttuvel
Dr. Ram Lakan Verma

The hybrid rice group met on 1st June, 2019 at 2.30 P.M. in Ramaiah Conference Hall, ICAR-National Rice Research Institute, Cuttack. Around 52 participants from public and private sectors actively participated in the deliberations. Dr. S.K. Pradhan, Principal Scientist, ICAR-NRRI welcomed the Chairman and the delegates. The chairman of the session Dr. M.S. Ramesha emphasized on the need of strengthening the Public-Private Partnership in the hybrid rice research for area expansion in the country. He also stressed on the development of region specific quality rice hybrids to meet the demands of the end users.

Dr. Dinesh Kumar, ADG (FFC), ICAR, Dr. H. Pathak, Director, ICAR-NRRI, Cuttack and Dr. S.R. Voleti, Director, ICAR-IIRR, Hyderabad interacted with the delegates and appreciated their efforts in strengthening the Hybrid Rice Research in the country. They advised to conduct hybrid demonstration trials of the popular hybrids at ICAR-IIRR, Hyderabad and ICAR-NRRI, Cuttack, for the purpose of showing to visiting dignitaries and farmers.

Dr. A.S. Hari Prasad, PI, AICRIP-Hybrid Rice discussed promotion and deletion of entries of Hybrid Rice trials and following issues emerged from the discussion.

- IHRT (Kharif 2019) trial constitution is completed and seeds were already dispatched to the respective centres.
- MLT hybrid evaluation trial of recently released hybrids will be constituted during kharif 2020.
- Hybrids which are qualified for evaluation in AVT-2 trials are also required to be evaluated in Agronomy evaluation trial. Out of 14 hybrids evaluated in AVT-2 trial during khairf 2018, nine hybrids only were evaluated in Agronomy trial and 5 hybrids viz., JKRH 2154, JKRH 2230, MR 8666, PHI 16101 and TMRH 124 were not evaluated in Agronomy trial. These five entries may be evaluated in Agronomy trial during Kharif 2019.
- The group expressed concern about the hybrid rice area stagnation at 3 m.ha for the last 3-4 years and discussed the reasons for this bottlenecks and possible strategies to expand the area under hybrid rice in the country. The major limitations felt were: inadequate yield heterosis, seed cost, susceptible to biotic stresses and quality concerns.
- To overcome the above limitations, the group felt to focus on parental line improvement for floral traits like high out-crossing rate, stigma exertion (female

line), high pollen load and better restoration ability (male parents) besides diversification of base population through inter-sub-specific hybridization and involvement of wild species through pre-breeding approach. Introgression of resistance/tolerance genes for major biotic/abiotic stresses was also emphasized

- The issue of local check in the AICRIP trials was discussed and group felt that at many locations, inappropriate local checks (not fitting in the corresponding flowering duration and grain type) are included. And as a result, promotion and deletion of the test genotypes are adversely affected. It was suggested to consider only National and Zonal checks for promotion/deletion purpose.
- IHRT test locations of respective zones were reviewed and certain new locations were identified with the help of private sector.
- The area under hybrids in direct seeding is increasing in states like Chhattisgargh, Jharkhand, Madhya Pradesh, Odisha and Karnataka. A need was felt to increase the testing locations in the above states in direct seeded/aerobic trials.
- As the hybrid rice area in Rabi (dry) season is increasing in states like Andhra Pradesh, Telangana, Chhattisgarh, Karnataka, Odisha and West Bengal, a need was felt to have a rabi hybrid rice trial with mid-early and medium duration.
- Grain quality data for promotion/deletion purposes has to be generated from three different laboratories (IIRR, NRRI and IARI) with standard protocol.
- DNA fingerprinting profile of hybrid nominations along with the parental lines are proposed to be generated to maintain the unique identity of the materials.
- Private sector expressed the concern over the revised testing fee for evaluation of the rice hybrids in AICRIP testing and mentioned that is varying crop to crop. They requested for a uniform testing fee across crops. PI informed that the revised testing fee has been approved by the ICAR recently and the same thing will be followed.

Table 1: Hybrid rice breeding nurseries 2018-19

Centre	Source nursery	Backcross nursery	Test cross nursery	CMS evaluation
Coimbatore	530	40	150	9
IARI, New Delhi	-	-	600	19
IIRR, Hyderabad	920	40	620	10
Jagtial	500	30	50	16
Karjat	540	12	260	24
Ludhiana	192	28	140	37
Mandya	580	10	410	25
Maruteru	900	8	800	30
NRRI, Cuttack	1127	139	748	16
Raipur	498	15	200	05
Warangal	250	14	170	-

CONCURRENT SESSION

AGRONOMY

Chairman : Dr S.R. Patra
Co-Chairman : Dr R. Ilangovan
Program Leader : Dr R.M. Kumar
Rapporteur : Dr MangalDeep Tuti

The 54th All India Rice Research Group Meeting of Agronomy was held on 30thMay, 2019 at ICAR-NRRI auditorium, Cuttack. 50 Scientists co-operators and delegates of IRRI-India from 45 centres participated in the group meeting. The session was chaired by Dr. Ilangovan, Professor, KAU, Pattambi and Co-chaired by Dr.P.C. Pandey, Professor (Agronomy), GBPUAT, Pantnagar. Dr. R. Mahender Kumar, PI and Head, Agronomy Section, IIRR welcomed all the delegates after brief introduction of the participants. Dr. Ilangovan in his opening remarks insisted upon the low cost of cultivation is of prime importance in rice cultivation. Further, production technologies and impact in farmers fields should be the necessity of the hour. Also there is need for mechanization in view of labour shortage. Dr.P.C. Pandey emphasized on developing complete package of practices/ guideline for emerging technologies to enhance the productivity. The results of agronomic trials (210) conducted during 2017-18 were presented by Dr. R.M. Kumar, Dr. B. Sreedevi and Dr. Mangal Deep Tuti. After thorough deliberations the following recommendations are made

- A clear guideline/package of practices for mechanical transplanting may be developed for different agro-ecologies. If mechanical transplanting is not performing well find out the cause/reason
- Nutrient management trials blocks should be kept as fixed plot
- Green manuring crops and biofertilizer may be used in place of organic manure due to its non-availability
- Initial and final soil nutrient status to be analysed specially in nutrient management trials
- Benefit cost ratio to be calculated for profitability of the system

Director, ICAR-NRRI emphasized that production technology can be evaluated like varieties/advanced entries are evaluated in breeding trials. He further suggested to popularize the promising production technologies among state agriculture department and local political leaders. Developing technologies will give special recognition to scientists. Director, ICAR-IIRR urged to bind upon the action taken from last workshop. He insisted to develop climate resilient technologies for a sustainable rice production. Nutrient use efficiency trials (N and P) may be taken up in consultation with breeding counterparts. Utilization of AICRIP-MIS for data submission has been emphasized for timely submission of data. Agronomists of 3 centres (Ludhiana, Rajendranagar and Pattambi) presented their results of trials conducted in 2018. Dr. Dinesh Kumar, ADG (FFC) also interacted with the group and emphasized the need to develop cost effective technologies and their large scale promotion.

The second concurrent session of 54th All India Rice Research Group Meeting of Agronomy was held on 1st June, 2019 at 2:00 PM at ICAR-NRRI Auditorium and was attended by 50 scientists from 45 centres. The session was chaired by Dr.R.S. Patra, Director (Agriculture), West Bengal and Co-chaired by Dr. Ilangovan, Professor, KAU, Pattambi. Dr. R.M. Kumar, Principal Scientist (Agronomy), PI and Head, Agronomy Section, IIRR welcomed all the delegates. The chairman of the session, in his introductory address insisted on the significance of agronomy in enhancing the food grain production which can match the ever increasing population. Chairman insisted that straw burning issue can be resolved by developing technology on alternate use of straw. As rice is grown in different ecologies, a suitable technology needs to be developed in these areas which are applicable to the entire zone. Dr. Ilangovan in his opening remarks also insisted the need for developing location specific technologies so as to achieve higher productivity and the challenges being faced by agronomists and the measures which could be adopted. Dr. R.M. Kumar summarized the proceedings of the group meeting held on 30th May, 2019.

All the participants thoroughly discussed and involved together for the formulation of trials.

The proceedings of the meeting are as follows:

- Continuation of AVT-2 trials with new entries. Best AVT-2 entries for varietal identification will be tested for different duration. Short duration entries will be tested under 50% and 100% RDF whereas medium and long duration will be tested under 100% and 150% RDF (will include recommended doses of N, P and K of respective location).
- Agronomists/Physiologists/soil scientists has to be duly acknowledged and given credit in varietal release
- Few centres (for NUE Varanasi, Pattambi, Titabar, Ranchi, Ludhiana, Warangal and for PUE IIRR, Patna, Moncompu, NRRI, Karaikal) showed interest to conduct of nutrient use efficiency trials (N and P) in collaboration with soil science and physiology.
- System based flagship programme for mechanized transplanting, wet and direct seeded rice are formulated and in coming years package of practices will be developed and validated under different situations.
- As part of the programme of mechanized transplanting, nutrient management studies will be taken up on priority basis.
- Nutrient Expert trial will be evaluated in farmers' field in large scale.
- Water management trial will be continued.
- Evaluation of herbicide molecules will be continued for second season.
- Newly released early and mid early high yielding varieties will be tested for weed competitiveness under wet and dry DSR systems.
- Long term evaluation of weed management practices under different establishment methods will be initiated.
- IPM trial in collaboration with entomology, pathology and agronomy will continue.
- RBCS trials should be strengthened

- Resource conservation technologies in rice production system (predominant system) to be fine tuned.

  Finally the group decided to conduct the following 1 4 trials for ensuing *kharif* and *rabi* seasons of 2019-20.

S.No	Name of the Trial
I	**AVT – 2 Nutrient Management Trials (NMTs)**
1	**Evaluation of AVT-2 cultures for their yield performances under**
	(a) AVT 2-E (H)
	(b) AVT 2-M (H)
	(c) AVT 1 U (H)
	(d) AVT 1-E-DS
	(e) AVT 2-E-TP
	(f)AVT 2 – IME (TP)
	(g) AVT 2 – IM (TP)
	(h) AVT 2-L
	(i) AVT 2 -MS
	(j) AVT 2-Aerobic
	(k) AVT 1-Boro
	(l) AVT 2-AL&ISTVT
	(m) AVT 2- RSL
	(n) AVT 2-SDW
	(o) AVT 2-CSTVT
	(p) AVT 1 -BT
	(q) AVT 2-Biofort
	(r) AVT-2 NIL Bl
	(s) AVT-2 NIL sub
	(t) NPTs
II	**Cultural Management Trials**
2	Development of package of practices for mechanized transplanting **(Collaboration with Entomology)**
	Development of package of practices for DSR (Collaboration with Entomology)
3	i) Dry DSR
4	ii) Wet DSR
5	iii) Evaluation of IRON coated seed for direct seeded rice for enhancing the crop establishment as well as productivity
6	Yield maximization in farmers field using Nutrient Expert
7	Water management for enhancing water use efficiency and higher productivity
III	**Weed Management Trials**
8	Long term studies on weed diversity in wet and dry rice cultivation
9	Evaluation of weed suppressing cultivars under different ecosystems
10	Evaluation of Thiobencarb against weeds of puddled DSR
11	Integrated Pest Management (Collaborative trial with Entomology & Pathology)
IV	**Resource conservation technologies (RCTs) in RBCS**
12	Conservation Agriculture / System based Management Practices in Rice and rice based cropping systems (crop diversification) for higher profitability.

S.No	Name of the Trial
13	Technology to enhance the productivity of cultivars suitable for late planting situation
14	Exploration of rice fallows (Rice-cereal, Rice-oilseed, Rice-pulse)
	Analysis of long term meteorological data of AICRIP centres (temp and rainfall) for identifying the reasons for yield reduction (Collection of 25 years data)

A total of 14 trials were finalized during concurrent session in consultation with the Chairman and co-operators. Allocation of the trials during 2019-20 and the details of the locations under each trial are as follows:

Trial No	Name of the trial	Kharif	Total
	AVT-2 TRIALS		
I	**AVT – 2 Nutrient Management Trials (NMTs)**		
	(a) AVT 2-E (H)	Almora, Khudwani, Malan, Upper Shillong	4
	(b) AVT 2-M (H)	Almora, Khudwani, Lamphelpat, Malan, Umiam, Upper Shillong, Wangbal	7
	(c) AVT 1 U (H)	Almora, Lamphelpat, Malan, Umiam, Upper Shillong, Wangbal	6
	(d) AVT 1-E-DS	Chiplima, Hazaribagh, Jagdalpur, Mandya, Ranchi, Rewa, Sabour, Varanasi	8
	(e) AVT 2-E-TP	Faizabad,Maruteru, Nagina, Puducherry, Raipur, Ranchi	6
	(f)AVT 2 – IME (TP)	Aduthurai,Chinsurah,Chiplima, Faizabad, Gangavathi, Karjat, Navasari,Pattambi, ARI-Rajendranagar.	9
	(g) AVT 2 – IM (TP)	Chinsurah ,Chiplima,Coimbatore, Faizabad, Jagdalpur, Karjat, Kaul,	7
	(h) AVT 2-L	Aduthurai, Chinsurah, Chiplima, Karjat, Mandya, Maruteru, Patna, Pusa	8
	(i) AVT 2 -MS	Andaman (CIARI),Chakdah, Karjat, Kaul, Maruteru,Mandya, Nagina, Raipur	8
	(j) AVT 2-Aerobic	Cuttack, Kaul, Ludhiana, New Delhi (IARI), Nawagam, Pantnagar, Raipur, Ramanathapuram, Vadgaon	9
	(k) AVT 1-Boro	Chinsurah, Chiplima, Cuttack, Gerua, Titabar	5
	(l) AVT 2-AL&ISTVT	Kanpur, Karnal, Navsari, Lucknow, Ramanathapuram	5
	(m) AVT 2- RSL	Chinsurah, Faizabad, Ghaghraghat, Pusa, Patna	5
	(n) AVT 2-SDW	Cuttack, Faizabad, Maruteru, Nellore	4
	(o) AVT 2-CSTVT	Canning.Panvel, Ramanathapuram, Vytilla	4
	(p) AVT 1 -BT	Ludhiana, Chatha, Kanpur, Varanasi, Nagina, Kaul	6
	(q) AVT 2-Biofort	Chinsurah, Coimbatore, Hyderabad, Kaul, Mandya, Maruteru, Nagina, Nawagam, Pantnagar, Raipur, Rewa, Varanasi	12
	(r) AVT-2 NIL Bl	Chinsurah, Coimbatore, Hyderabad, Kaul, Mandya, Maruteru, Nagina, Nawagam, Pantnagar, Raipur, Rewa, Varanasi	12
	(s) AVT-2 NIL sub	Titabar, Chinsurah, Ghagharghat, Dungain, Pusa	5
	(t) NPTs	Chinsurah ,Chiplima,Coimbatore, Faizabad, Jagdalpur, Karjat, Kaul, Mandya, Maruteru, Nawagam, Pantnagar, Patna, Phondaghat, Titabar, Varanasi	15

	(b)Late planted cultivars	Aduthurai, Chinsurah, Chiplima, Karjat, Mandya, Maruteru, Patna, Pusa	8

****The trial constitution will be decided in consultation with plant breeding.***
***The seed material for above trials should reach PI Agronomy by 1st week of June in sufficient quantity and good quality*.**

II	**Cultural Management Trials**			
		Kharif	**Rabi**	**Total**
2	Development of package of practices for mechanized transplanting	Aduthurai, Rajendra nagar, Maruteru, Warangal, Puducherry, Chiplima and Gangavathi		7
	Development of package of practices for DSR			
3	Dry DSR	Kota, Karjat, Kaul, Ranchi, Jagdalpur, Mandya, Gangavathi, Gaghraghat, Nagina, Hazaribagh, Chatha, Vadagaon, Rajendranagar, Jagatial, Warangal	Titabar	16
4	Wet DSR	Varanasi, Karaikal, Moncompu, Jagdalpur, Titabar, Rajendranagar, Warangal, Chinsurah, Aduthurai, Dhangain, Coinbatore, Karjat, Chakdah	Puducherry and Maruteru	15
5	Evaluation of IRON coated seed for direct seeded rice for enhancing the crop establishment as well as productivity	Coimbattore Maruteru Karjat, Raipur Chiplima, IIRR	Coimbattore Maruteru, Karjat Raipur, Chiplima IIRR	12
6	Yield maximization in farmers field using Nutrient Expert	Karjat, Chinsurah, Chiplima, Pattambi, Chakdah and Parbhani		6
	Water Management			
7	Evaluation of different irrigation management for their water saving potential and enhancement of the productivity (testing of micro irrigation systems in wet and dry conditions)	Faizabad, Gangavati, Mandya, Nawagam Pantnagar, IIRR, Varanasi Karaikal, Arundhatinagar, Chatha	Faizabad, Chatha Gangavati, Mandya, Nawagam Pantnagar, IIRR, Varanasi, Karaikal, Arundhatinagar, and puducherry	21
	Weed Management Trials			
8	Long term studies on weed diversity in wet and dry rice cultivation	Aduthurai, Chatha, Chinsurah, Chiplima, Coimbatore, Rewa Cuttack, Dhangain, Faizabad, Ghaghraghat, Jagdalpur, Kota, Malan,		

II	**Cultural Management Trials**			
		Kharif	**Rabi**	**Total**
		Moncompu, Nagina, Navsari, Nawagam, Phondaghat, Ranchi, Vadgaon, Varanasi.		
9	Evaluation of weed suppressing cultivars under different ecosystems	Chiplima, Parbhani, Titabar, Moncompu, Nagina, Gangavathi, Puducherry, Jagtial		
10	Evaluation of Thiobencarb against weeds of puddled DSR	IIRR, Raipur, NRRI, Puducherry, Malan		
11	Integrated Pest Management – (Collaborative trial with Entomology and Pathology)	Chatha, Chinsurah, Ghaghraghat, Malan Mandya, Nellore, Raipur, Titabar, Jagdalpur,, Pattambi, Puducherry, Sakoli		
	RCTS in RBCS			
12	Conservation Agriculture / system based management practices in rice and rice based cropping systems (crop diversification) to utilise the resources and enhancing the profitability and productivity	Aduthurai , Chinsurah, Maruteru, Karjat, Rajendernagar, Titabar, Varanasi , Patna, Vadgaon	Aduthurai , Chinsurah, Maruteru, Karjat, Rajendernagar, Titabar, Varanasi , Patna, Vadgaon	18
13	Technology to enhance the productivity of cultivars suitable for late planting situation	Aduthurai , Chinsurah, Maruteru, Karjat, Rajendernagar, Titabar, Varanasi	Aduthurai , Chinsurah, Maruteru, Karjat, Rajendernagar, Titabar, Varanasi	
14	Exploration of rice fallows (Rice-cereal, Rice-oilseed, Rice-pulse) Promotion of millets specially Sorghum in rice fallows.	Aduthurai, , Ragolu Arundhutinagar, Chinsurah, Cuttack Jagdalpur, Mandya Ghaghraghat, Titabar , Kanpur	Aduthurai, Arundhutinagar, Chinsurah, Cuttack Jagdalpur, Mandya , Ghaghraghat, Titabar Ragolu, Kanpur	20
	Analysis of long term meteorological data (temperature and rainfall) for identifying the reasons for yield reduction in different rice based cropping systems	All the locations		

Agronomists will also collaborate in conducting organic rice cultivation and utilisation of straw in rice based cropping systems

Finally the chairman concluded the session and appreciated all the members. He insisted on the development and refinement of package of practices for the profitability of the rice farmers for each situation/system. The session ended with a vote of thanks by Dr. Mangal Deep Tuti, Senior Scientist, ICAR-IIRR, Hyderabad.

CONCURRENT SESSION

PLANT BREEDING

Chairman : Dr S. R. Das
Co-Chairman : Dr J. L. Dwivedi
Program Leader : Dr G. Padmavathi
Rapporteurs : Dr R. Abdul Fiyaz
Dr M. Chakraborti

The Breeder's group comprising of ~160 participants met during 54th ARGM on 29thMay 2019 at K. Ramaiah Conference hall, ICAR-National Rice Research Institute, Cuttack to discuss the progress of AICRIP trials conducted during 2018-19. The session was chaired by Dr. S. R. Das, Emeritus Professor, Orissa University of Agriculture and Technology, Bhubaneswar and Co-chaired by Dr. J. L. Dwivedi, Director of Research (Retired), Narendra Dev University of Agriculture and Technology, Faizabad. Dr. S. R. Das extended warm welcome to the distinguished delegates from AICRIP centers and private agencies participated in the 54th Annual Rice Group Meeting. Dr. G. Padmavathi, PI (In-charge), briefed about the gist of AICRIP varietal trials conducted during 2018, in her opening remarks suggested for proper conduct of the trials, data collection, submission of data and with respect to prescribed plot sizes to be maintained with appropriate population size. She emphasized on data receipt from funded centers was less (78.9%) and needs to be improved in future. She presented the overall constitution of AICRIP trials of different ecosystems which included 45 breeding trials and four hybrid rice trials, wherein trial wise discussion was held.

Dr. M.S. Anantha, Scientist (Plant Breeding) presented Rainfed Upland (Early direct seeded) Irrigated Medium, Low Phosphorous and Nitrogen trials;Dr. Aravind Kumar Jukanti, Senior scientist (Plant Breeding) presented Aerobic and Irrigated Medium Slender trials; Dr. C. Gireesh, Senior Scientist (Plant Breeding) presented Rainfed lowland and Salinity and Alkalinity trials; Dr. Jyothi Badri, Scientist (Plant Breeding) presented Irrigated Early, Mid Early, Near Isogenic trials–Drought and New Plant Type trials; Dr. R. Abdul Fiyaz, Scientist (Plant Breeding) presented Boro, Aromatic short grain, Irrigated Late, Basmati, Near Isogenic trials-Yield, Blast and Bacterial leaf blight trials; Dr. G. Padmavathi, Principal Scientist (Plant Breeding) presented Bio-fortification and Near Isogenic Lines-Coastal Salinity trials and Dr. P. Senguttuvel, Scientist (Hybrid Rice) presented Initial Hybrid Rice trials. In each trial detailed discussions were held and following decisions were taken.

Decisions taken in Breeders Group Meeting during 54thARGM on 29thMay 2019

- Cooperators have to clearly mention whether it is zero yield or mortality of entries in the data sheet for which yield data is not reported while sending to IIRR.
- Adjusted means should be worked out for missing data rather than putting "0" value against yield data of entries.
- Increased number of locations in early direct seeded trial has been suggested.

- In case of drought trials, a sensitive check must be included for comparison in addition to tolerant check.It was suggested that for obtaining better results and quality data, the following methodologies need to be adopted in the protocol of EDS trial:
    a) Tensiometer based data need to be generated for the trial plots.
    b) If available, rainout shelter data is to be supplemented.
    c) In addition to plant breeding trials, genotypes can be assessed based on data generated from physiology experiments.
- As NIL confirmation was not done during 2018 in NILs (Coastal Saline Trials), all the entries suggested for repetition.
- Only the confirmed NIL (Drought) entries will be evaluated for trait verification following revised protocol in two maturity (Early/Mid early; Medium/Late) groups.
- The competent authorities of cooperating centers must be informed officially if data is not received from their respective centers.
- Elaborate discussion on new plant type trial was held and it was decided to discontinue the trial from AICRIP2019. However, if some entries have shown superior performance on overall or zonal basis with 7 t/ha and completed three years of testing (2015 to 2017) will be evaluated in agronomy trials.
- IET 25746 was found promising in AVT-2-IME trial for both Telangana and Haryana states.
- The entries present in NUE (N and P) will be repeated following the necessary protocols as decided by Plant Breeding, Physiology, Soil Science and Agronomy sections at IIRR. Field trial laid by section will intimate the other scientist involved in the trial for taking necessary observations.

Approved Guidelines for testing of NILs during the breeder's group meeting held at 54th ARGM on 29th May, 2019.

For any NIL to be promoted/released, the following details are essential besides the requirement mentioned in 46th, 52ndand 53rdARGM.

- All the NIL entries will be evaluated for their yield performance in the appropriate trials of similar duration under which the recurrent parent has been evaluated and released. No separate trial for assessing the yield performance (for NIL confirmation) will be conducted.
- The NILs and their respective donors and recurrent parents have to be screened in NSN in separate trial as well as under artificial inoculation in selected centers for assessing the target trait (biotic stress)
- For trait verification of abiotic stresses (drought, salinity and submergence), a separate trial will be conducted to evaluate yield under respective abiotic stress conditions. In addition, drought and submergence NIL entries will also be evaluated in physiology AICRIP trials.
- Special monitoring team has to be constituted for monitoring the performance of NILs at different locations.

- Genotyping of the NILs for target traits using foreground markers and (or) selected background markers for validating the background recovery will be done at IIRR.
- After ascertaining the grain type similarity of the NIL entry with the recurrent parent, the nominated entries will be included in the trial.

The session concluded with formal vote of thanks by Dr. Sutapa Sarkar.

The Plant Breeding group comprising of participants from different centers met again on 01st June 2019 during concurrent sessions at 3:00 PM under the chairmanship of Dr. S. R. Das, Emeritus Professor, Orissa University of Agriculture and Technology, Bhubaneswar and Co-chaired by Dr. P. V. Satyanarayana, Head and Principal Scientist (Rice), ANGRAU, RARS, Maruteru.

Dr. G. Padmavathi PI (In-charge)initiated the proceedings to finalize the technical programme for the year 2019-20. Dr. Jyothi Badri presented the technical programme of AICRIP varietal trial for the year 2019-20. Dr.M. Chakraborti (NRRI) and Dr. R. Abdul Fiyaz (IIRR) recorded the proceedings. Dr. Dinesh Kumar, ADG (FFC), Dr. Himanshu Pathak, Director (NRRI) and Dr. SR Voleti, Director (A) and Dr. AK Singh, Joint Director Research (A), IARI participated in the deliberations besides all the delegates. The session was followed by presentation on allocation of Breeder Seed Production (BSP) indents to respective organizations from DAC by Dr. R. Abdul Fiyaz, Scientist (Plant Breeding), IIRR.

1) Technical programme for the year 2019-20 was finalized based on the suggestions made during group meeting.
2) In case of single location, entry will not be assessed for promotion and will be repeated in the same trial in next year. As per the recommendation, entries performance will be assessed only when data from a minimum of three locations are available.
3) For early direct seeded trials, early genotypes will be compared with early checks and very early genotypes will be compared with very early checks in the same trial. New zonal checks are introduced in this trial; Anjali (northern) and GNV Ageti as sensitive check.
4) For Low phosphorous trial, the entries will be screened in P deficient plot of IIRR, natural P deficient soil at Ranchi and a few centres of North eastern states. However varietal performance can be judged based on mean of different centres. The result obtained from evaluation in P deficient plots of IIRR will be used for trait verification only. Soil samples from all the centres should be analysed for native phosphorus.
5) For quality analysis, separate block containing test entries lines with different maturity duration should be grown and harvested at physiological maturity. The harvested seeds will also be sent to NRRI and IARI for quality analysis.

Dr. S. R. Das and Dr. P. V. Satyanarayana appreciated the efforts of team plant breeding in coordination of AICRIP trials. The session of ended with vote of thanks by Dr. K. Chattopadhyay.

SPECIAL SESSION

Presentation and Panel discussion on Rice Research and Policy Issues

Chairman : Dr. H.S. Gupta;
Panellists : Dr. N. Sarla,
Dr. A.K. Singh
Dr. H. Pathak
Rapporteurs : Dr. R. M Sundaram
Dr. K. Chakraborty

A panel discussion on Rice Research and Policy Issues was conducted on 1st June 2019. A total of four presentations were made in this session. Dr. N. Sarla, National Professor, ICAR-IIRR, Hyderabad gave a talk on "Chromosome segment substitution lines (CSSLs): An important National Resource". Wild relatives of *Oryza* are a valuable genetic resource for many agronomically important traits and one of the promising approaches for characterizing and tapping their genetic variability is through development and evaluation of CSSLs. No CSSLs have been so far developed in rice in our country and Dr. Sarla's research team has developed for the first time a set of five CSSL populations in the genetic background of the elite rice varieties, Swarna and MTU1010 for mapping yield and yield associated traits with the help of markers. The Universal Core set SSR markers (~ 150 markers covering the whole genome) were used for genotyping. A total of four carefully selected accessions belonging to *O. nivara* and *O. rufipgon* were used as donors. The CSSLs were advanced till BC4 generation, selfed and and a total of 3389 lines were evaluated for yield and genotyped with SSR markers. More than 65 % lines showed improvement over the recurrent parents with respect to yield associated parameters like tiller number, plant height, panicle number, total dry matter, flag leaf width, days to maturity etc. and many yield associated QTLs have been identified. In particular, the CSSLs derived from Swarna x *O. rufipogon* showed an improvement by 20 % with respect to yield.

Dr. A.K. Singh gave a talk on "Challenges and opportunities related to rice research". Research efforts require patience and the excellent Basmati varieties developed in recent years are a result of eight decades of work. Major challenges to Basmati export are losses due to biotic stresses and pesticide/fungicide residues. These problems and other problems related to rice production could be addressed by increasing investment in research. Molecular breeding is a promising tool for rice improvement. But there are many constraints in molecular breeding like incomplete reconstitution of the recurrent parent genome in marker-assisted backcross breeding due to lesser number of backcrosses, lesser population sizes and high genotyping costs. It is desirable to carry out additional backcrosses to recover a significant part of the genome of the recurrent parent. Further, MABB is a restrictive approach and in order to increase the genetic gain, new approaches like marker-assisted recurrent selection, genomic selection, speed breeding, precision phenotyping, efficient breeding management system along with development of regional genotyping centres should be deployed. Dr. Singh also highlighted the advantages in deploying genomic editing for targeted improvement of traits.

Dr. Himanshu Pathak presented on the topic "Natural research management in Indian rice scenario". Rice development goals are perfectly aligned with sustainable

development goals. He mentioned that green house gas emissions per tonne of rice produced has decreased over the years, while nitrogen use efficiency increased by four times. The yield gain has been very minimal in the last two decades across all ecologies in which rice is grown. Even though the yield gap is decreasing, the anomaly with respect to gain in productivity and gain in genetic yield needs to be addressed in the right perspective. Dr. Pathak proposed a model called "Eco-region based rice farming". He suggested five steps in the model and suggested that rice production activities can be shifted from unfavourable ecosystem to favourable areas and use the area spared for growing other crops like oilseeds and pulses. Towards this objective, ICAR-NRRI has initiated four flagship projects.

Dr. H.S. Gupta spoke on "Rice research and policy: strategy to meet the requirements" in which he lamented the fact that we have been looking to exploit low hanging fruits in terms of rice improvement. While we have increased the harvest index from 0.3 and 0.5 and obtained a significant genetic gain after the advent of green revolution, the focus of new breeding programmes should be towards increasing total biomass and partitioning of the photosynthates into grains more efficiently. China has shown the way by moving away from development of varieties and hybrids which are dwarf or semi-dwarf to those which are tall or super tall, which have better yield potential due to higher biomass accumulation. He gave an account on the short term and long term goals to increase the productivity in different rice ecosystems. The area under rice may be decreased in north India and focus should be given for increasing productivity in Central and north eastern part of the country. South India is another region wherein significant increase in productivity can be achieved to meet the future requirements. He suggested initiation of a rice testing centre in the region between Varanasi and Patna, preferably Ghazipur and shifting the Rewa centre of AICRIP to Jabalpur. He also suggested diversification of rainfed upland areas to other crops and discouraging long duration rice varieties in north India, improving sustainability in rice, adopting conservation agriculture pursue blue ocean research initiatives like C4 rice. He also gave an account of the key to success in increasing the rice productivity across different ecosystems and mentioned that lessons can be learnt from wheat, wherein a better gain in productivity has been achieved as compared to rice in the last four decades.

The presentations were followed by discussions. It was suggested that the good work done at ICAR-IIRR with respect to CSSL development should be continued forward by young scientists and requested the team to focus on few traits. The process of development of CSSLs, phenotyping and genotyping can also be done in early generations to quickly identify the genomic loci underlying yield related traits. For developing and mapping CSSLs, ~ 150 SSR markers may not be sufficient to give complete coverage of the genome and high-throughput SNP markers may be used to uncover the genomic loci underlying QTLs associated with yield improvement. It was also suggested, that in addition to *O. nivara* and *O.rufipogon*, other wild rice species may also tapped to develop CSSLs. Development of precision phenotyping facilities can help in accelerate trait discovery and product development. The profitability of rice farming should be ensured. There is also a need to associate social scientists while framing research projects and also in terms of assessing the potential of cost saving technologies.

SPECIAL SESSION ON ICAR-IRRI COLLABORATIVE PROGRAM

Chairman : Dr. Dinesh Kumar, ADG, FFC, ICAR
Co-Chairman: Dr. Arvind Kumar, Director, ISARC
Rapporteur : Dr. S. K. Dash (NRRI)
Dr. R. Abdul Fiyaz (IIRR)

The special session on ICAR-IRRI collaborative program was held during 54th ARGM on 01st June 2019 at New Auditorium, ICAR-National Rice Research Institute, Cuttack to discuss the progress of ICAR-IRRI collaborative project. Dr. Dinesh Kumar welcomed all the participants to the special session followed by brief presentation by Dr. Arvind Kumar on ICAR-IRRI Progress report which comprised 8 projects, 26 sub projects, 137 staff in India involving 41 ICAR and SAU institutes. The major theme areas consisted of Global rice Array, New Rice varieties, Accelerating Impact and Equity, Sustainable Farming System, Upgrading Rice Value and Sustainable Farming System. The progress of work and achievements were discussed by Dr. Arvind Kumar in detail. Important progress made during last year for first two projects includes the work on stem carbohydrate and physiological mechanisms to develop climate smart varieties for unfavourable environment, genome editing through CRISPER–CAS 9 for increased grain number, activation of SWEET genes for BLB resistance, pyramiding of yield genes for increasing productivity, development of high Zn rice, development of low GI rice, breaking of linkage of low GI and cooking quality.

He also emphasized on climate smart practices for efficient weed management, Advance breeding technologies to speed up genetic gain, creation of durable resistance to biotic stresses and increase genetic gain for Indian farmers' and consumers' food and nutritional security. Similarly, strengthening seed systems through innovative demonstrations and extension approaches was discussed for accelerating Impact & Equity. New high yielding varieties includes promising line development for DSR and TRP which were shared with national partners. IRRI has also shared germplasm to national partners. Moreover, it has imparted 18-19 trainings.

However, there were duplications in the existing work plan and it was decided to revise the work plan. On the basis of the discussion, the number of Projects was reduced to four theme areas with 13 sub-Projects which is under the process of approval. In this context, some of the distinguished delegates discussed regarding the detailed progress of C4 and multiple resistant lines and their sharing, which was responded positively.

It was followed by presentation by Dr. John Damien Platten on new genetic resources for biotic and abiotic stresses followed by presentation again by Dr. Arvind Kumar on 'IRRI-South Asia Regional Centre' (ISARC), Varanasi. He briefed about the need for establishment of center at Varanasi and its mandates, facilities and services available to NARES and private sector to support research on grain quality, nutrition and climate resilience.

It followed by presentation by Dr. Meera Kar on revised ICAR-IRRI work plan and progress made during last year by the NRRI, Cuttack. Dr. S.R. Voleti, Director, IIRR presented the progress of IIRR and other national partners involved in ICAR-IRRI projects and its salient achievements. He informed the house regarding streamlining of ICAR-IRRI Projects based recent meetings in the council and with other partners.

The ICAR-IRRI Work plan was thoroughly discussed in the presence of Dr. H.S. Gupta, Dr. H. Pathak, Dr. SR Voleti, Dr. A.K. Singh and other cooperators in the house and following decisions were taken.

- The New IRRI centre (ISARC), Varanasi has to focus on its mandate and it should help national partners for raising their capabilities.
- The new centre has to invest more on high end research.
- They should not work on basmati rice as national partners have state of art facility and expertise to address issues like quality, heavy metal estimation etc, related to basmati.
- ISARC may focus on short grain aromatic rice and not on basmati rice.
- ISARC should avoid duplication/overlapping of research activities with national program.
- Approved ICAR-IRRI work plan should be followed and no frequent intermittent changes should be made.

Chairman thanked all the IRRI scientists and all speakers of the session. The session ended with vote of thanks.

PROCEEDINGS OF THE VARIETAL IDENTIFICATION COMMITTEE

Variety Identification Committee (VIC) chaired by Dr. Dinesh Kumar, ADG (FFC)(A), ICAR met on 31st May, 2019 in the Ramaiah Committee Room of ICAR-National Rice Research Institute, Cuttack during the 54th All Indian Annual Rice Research Group Meetings. The members of the Committee are listed in the Annexure "A". A total of 29 proposals comprising of 14 varieties and 15 Hybrids were put up to the Committee. The list of cultures /varieties presented before the VIC is given below:

List of VIC Proposals received for 54th ARGM 2019

S.No	IET No	Designation	Submitted by	Variety/ Hybrid
Early Direct Seeded				
1	25103	Rice CO 53 (CB 13805)	TNAU, Coimbatore	Variety
2	26365	YRH 909	Yaganti Seeds Pvt. Ltd.	Hybrid
Rainfed Shallow Lowland				
3	25856	MTU 1223	ANGRAU, Maruteru	Variety
Early Transplanted				
4	24914	JKRH 2154	JK Agri Genetics Limited, Hyd	Hybrid
Irrigated Mid Early				
5	25745	PHI 16101	PHI Seeds Pvt. Ltd., Hyderabad	Hybrid
6	25746	KPH-471	Kaveri Seed Company Ltd., Secunderabad.	Hybrid
7	24950	JKRH 2230	JK Agri Genetics Limited	Hybrid
8	24931	RH 9000 Plus	Dev Gen Seeds and Crop Technology, Hyderabad	Hybrid
9	25764	MP 3030	Mahindra Agri. Solutions Ltd.	Hybrid
Irrigated Medium				
10	25997	CR Dhan 312 (CR 3808-13)	ICAR-NRRI, Cuttack	Variety
11	25785	ADV 1603	UPL Limited	Hybrid
12	25330	WGL-739	PJTSAU, Warangal	Variety
Irrigated Late				
13	25269	MEPH-126	Maharashtra Hybrid Seeds Company Pvt. Ltd., Jalna, Maharashtra.	Hybrid
Boro				
14	25692	CR Dhan 602 (IR 82489-7-2-2-2 CR 3724-1	ICAR-NRRI, Cuttack	Variety
29	24173	Uttar Lakshmi (UBKVR-15)	Uttar Banga Krishi Viswavidyalaya, Pundibari, West Bengal	Variety **(Resubmission)**
Aromatic Short Grain				
15	25419	Malviya Sugandhit Dhan 156	Institute of Agril. Sciences, BHU, Varanasi	Variety **(Resubmission)**

S.No	IET No	Designation	Submitted by	Variety/ Hybrid
Aerobic				
16	25640	RCPR -22-IR84899-B-183-20-1-1-1)	ICAR Res. Complex for Eastern Region, Patna	Variety **(Resubmission)**
17	26198	MEPH 134	Maharashtra Hybrid Seeds Company Pvt. Ltd., Jalna, Maharashtra.	Hybrid
18	25728	US 380	Seed Works International Pvt.Ltd.	Hybrid
27	26178	TRC 2015-5	ICAR Res. Complex for NEH Region, Tripura Centre, Lembucherra.	Variety
Medium Slender Grain				
19	24990	MR 8666	Metahelix Life Sciences Ltd., Bangalore	Hybrid **(Resubmission)**
20	25804	US 303	Seed Works International Pvt.Ltd.	Hybrid
21	25508	NP 9359-9	Nuziveedu Seeds Pvt. Ltd.	Variety
22	25798	TMRH 124	Trimurthi Plant Sciences Pvt. Ltd. Hyderabad	Hybrid
23	26263	MTU 1239	ANGRAU, Maruteru	Variety
24	25793	MEPH -129	Maharashtra Hybrid Seeds Company Pvt. Ltd., Jalna, Maharashtra.	Hybrid
25	25489	CR Dhan 313 (CR 3511-3-2-2-5-1-1_	ICAR-NRRI, Cuttack	Variety
26	26241	DRR Dhan 53(RP 6112-SM-M-93-3-2-3-4-3)	ICAR –Indian Institute of Rice Research, Hyderabad	Variety
Biofortification				
28	26383	DRR Dhan 54 (RP 5115-111-24-3-1-1	ICAR –Indian Institute of Rice Research, Hyderabad	Variety

The Committee observed that few proposals were submitted without agronomic data. The committee decided that single location data cannot be considered for promotion, at least 3 location data is to be provided and the VIC shall recommend for the zones.

All the 29 proposals were critically examined for their overall and zonal yield performance over the years, reaction to biotic stresses, performance in agronomic trials, and quality features and also performance on other specific stresses such as submergence and drought. Specific comments and decision of the committee are given below for all the proposals.

Early Direct Seeded:

- **Proposal No.1: IET 25103 (Rice CO 53)**

  This proposal is submitted for early direct seeded ecology and the proposal was considered. Since, the culture was tested for 4 years in a single location across states and due to lack of consistency for yield over the years it was not identified.

- **Proposal No. 2: IET 26365 (YRH 909)**

  This proposal is submitted for early direct seeded ecology. Since the culture was tested at only 5 locations and due to lack of consistency in yield, low HRR and susceptible to diseases, it was not identified.

Rainfed Shallow Lowland

- **Proposal No.3:IET 25856 (MTU 1223)**

  It consistently performed over the years, showed yield superiority of 8.6 % over the best varietal check, recorded high HRR (64.4%) along with intermediate AC (23.8%) and GC (42mm). Identified for Zone III (Odisha and Bihar).

Early Transplanted

- **Proposal No. 4: IET 24914 (JKRH 2154)**

  Though the entry exhibited superior performance over the Varietal and Hybrid check the committee recommended resubmission of the proposal along with mandatory agronomic data as per the proceedings of 53rd ARGM.

Irrigated Mid Early

- **Proposal No. 5: IET 25745 (PHI 16101)**

  The committee recommended resubmission of the proposal along with mandatory agronomic data as per the proceedings of 53rd ARGM.

- **Proposal No. 6:IET 25746 (KPH 471)**

  The long slender hybrid exhibited yield superiority over best varietal check and hybrid check in zone II and zone VII. It showed desirable quality traits: HRR (60.4%) and intermediate AC (24.6%). Hence identified for Zone II (Haryana, Punjab, Uttarakhand) and Zone VII (Telangana, Karnataka, Kerala).

- **Proposal No.7:IET 24950 (JKRH 2230)**

  The committee recommended resubmission of the proposal along with mandatory agronomic data as per the proceedings of 53rd ARGM.

- **Proposal No.8: IET 24931 (**RH 9000 Plus**)**

  The culture exhibited consistent yield superiority over best varietal check and hybrid check in Zone V with desirable quality: HRR (63.80%) and intermediate AC (23.5%) along with moderate disease resistance. Hence identified for Zone V (Maharashtra).

- **Proposal No.9: IET 25764 (**MP 3030**)**

  The proposed culture with long slender grains exhibited yield superiority over best varietal and hybrid checks in Zone II and Zone VI with desirable quality: HRR (64.70%) and intermediate AC (24.2%) and moderately resistant to leaf blast and

false smut. Hence identified for Zone II (Haryana, Uttarakhand) and Zone VI (Maharashtra, Gujarat).

Irrigated Medium

- **Proposal No.10: IET 25997 (CR Dhan 312)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. This culture has exhibited yield superiority over the best varietal check and hybrid check in Zone V along with desirable quality (HRR – 58.0%; AC – 26.7; GC – 51 mm). Further, this variety showed moderate disease tolerance. Hence, identified for Zone V (Maharashtra and Chattisgarh).

- **Proposal No.11: IET 25785 (ADV 1603)**

  IET 24698, a long bold hybrid culture recorded consistent yield superiority over the best varietal check and hybrid check over the years. It also exhibited moderate disease resistance to BLB, leaf blast and neck blast. It possessed desirable quality: HRR – 60.4% with intermediate AC (23.07%). Therefore, it is identified for Zone II (Haryana, Jammu & Kashmir and Uttarakhand).

- **Proposal No.12: IET 25330 (WGL 739)**

  The long bold culture, IET 25330 exhibited yield superiority of 7.5% over the best varietal check. It had moderate resistance to leaf and neck blast with desirable quality traits (HRR – 61.3%, and intermediate AC (24.5%). Therefore, the entry is identified for Zone III (Odisha and West Bengal) and Zone VII (Tamil Nadu).

Irrigated Late

- **Proposal No.13: IET 25269 (MEPH-126)**

  The medium slender hybrid, IET 25269 showed yield advantage over the best varietal and hybrid checks in two zones (III and VI). It had good HRR (58.6%) and intermediate AC (24.7%) along with moderate resistance to BLB, leaf and neck blast. Based on its yield performance, disease resistance and quality, this culture is identified for Zones III (West Bengal, Bihar and Odisha) and VI (Maharashtra).

Boro

- **Proposal No.14: IET 25692 (CR Dhan 602)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. This long slender entry exhibited yield superiority over the best varietal check (37.2%) in Zone IV with desirable quality (HRR: 59.6%; AC: 20.97%; GC: 45 mm). Further, this variety showed moderate resistance to leaf blast. Hence, identified for Zone IV (Assam and Tripura).

- **Proposal No.29: IET 24173 (Uttara Lakshmi)**

  A long bold grain type entry, IET 24173 exhibited yield superiority over the best varietal check and hybrid check over the years in Zones III and IV. It showed moderate disease resistance along with acceptable HRR (55.1%). Hence identified for Zone III (West Bengal and Odisha) and Zone IV (Tripura).

Aromatic Short Grain

- **Proposal No.15: IET 25419 (Malviya Sugandhit Dhan 156)**

  This entry has been tested four years and data has not been presented in proper format despite being indicated. Hence not identified.

Aerobic

- **Proposal No.16: IET 25640 (RCPR-22-IR84899-B-183-20-1-1-1)**

  IET 25640, a short bold grain culture exhibited yield advantage over the best varietal check in multiple zones. It has high HRR (63.2%), intermediate AC (22.52%) and good disease resistance to leaf blast and sheath rot. Hence identified for Zones II (Haryana), III (Odisha, Bihar and Jharkhand), V (Chhattisgarh) and VI (Gujarat and Maharashtra).

- **Proposal No.17: IET 26198 (MEPH-134)**

  A long slender hybrid, IET 26198 showed yield superiority over the best varietal check and hybrid check over the three years of testing in Zone III. It has disease resistance along with acceptable quality (HRR: 58.4% and intermediate AC: 24.3%). In Uttar Pradesh and Jharkhand, this entry was tested in one location only. Hence identified for Zone III (Bihar).

- **Proposal No.18: IET 25728 (US 380)**

  This medium slender grain hybrid entry IET 25728 exhibited yield advantage over the best varietal check and hybrid check in the three years of testing in Zone V only. It had both moderate disease (BLB) and pest (BPH and WBPH) resistance. It is identified for Zone V (Chhattisgarh and Madhya Pradesh).

- **Proposal No.27: IET 26178 (TRC 2015-5)**

  This entry is a short bold grain type with good yield advantage under aerobic conditions with good HRR (63.3%) and intermediate AC (22.2%). It also exhibited moderate resistance to leaf blast, neck blast and sheath blight. Additionally, keeping in view lower number of varieties released in this ecology, the committee has identified IET 26178 for Zones III (Jharkhand), V (Chhattisgarh) and VII (Karnataka).

Medium Slender

- **Proposal No.19: IET 24990 (MR 8666)**

  The committee has considered this proposal but recommended for its re-submission with agronomic data as mandated by 53rd ARGM Proceedings.

- **Proposal No.20: IET 25804 (US 303)**

  The medium slender grain type entry IET 25804 exhibited yield superiority over the best varietal check and hybrid check. It also showed acceptable quality: HRR: 63.3% and intermediate AC: 20.92% with moderate resistance to pest and disease. It was tested only at one location in Madhya Pradesh but exhibited yield advantage over the zonal and hybrid check. Hence identified for Zone V (Maharashtra).

- **Proposal No.21: IET 25508 (NP 9359-9)**

  A short slender grain type entry IET 25508 showed the required yield advantage. It had acceptable quality with high HRR (64.8%) and intermediate AC (22.0%). Also, it

exhibited resistance to brown spot and leaf blast. Hence, identified for Zone V (Chhattisgarh) and Zone VII (Telangana).

- **Proposal No.22: IET 25798 (TMRH-124)**

  The committee has identified this entry but due to lack of agronomic data it is deferred.

- **Proposal No.23: IET 26263 (MTU 1239)**

  A medium slender grain type entry IET 26263 exhibited the required yield superiority over the best varietal check (10.41%). It had very good HRR (61.7%) along with intermediate AC (24.5%). IET 26263 had moderate resistance to leaf blast and bacterial blight. Hence it is identified for Zones V (Maharashtra) and VII (Andhra Pradesh and Tamil Nadu).

- **Proposal No.24: IET 25793 (MEPH-129)**

  The medium slender grain type entry IET 25793 exhibited yield advantage over the best varietal check (10.0%) and hybrid check (9.0%). It had good HRR (59.9%) and intermediate AC (24.75%) along with resistance to BPH. It has been identified for Zone VI (Maharashtra).

- **Proposal No.25: IET 25489 (CR Dhan 313)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. IET 25489 had yield superiority over the best varietal check in Zone V. It had very high HRR (66.4%) and intermediate AC (23.9%) with moderate resistance to BLB and blast. Hence identified for Zone V (Maharashtra and Chhattisgarh).

- **Proposal No.26: IET 26241 (DRR Dhan 53)**

  This proposal was considered for Zone V (Chhattisgarh and Mahrashtra) and Zone VII (Telangana and Karnataka). However the Director, IIRR, Hyderabad informed that he has received representation from PJTSAU, Hyderabad regarding claiming the culture to be similar to RNR 15048. The Director informed the committee about the meetings conveyed by the Hon'ble VC, PJTSAU and the joint field visits of both IIRR and PJTSAU members. The proposal of IET 26241 with full details as proposed by the concerned scientist was submitted to VIC as per the procedure. The VIC committee after extensive deliberations decided to defer its decision until the authenticity of the culture i.e., IET 26241 is established through molecular profiling.

Bio fortification

- **Proposal No.28: IET 26383 (DRR Dhan 54)**

  Since the entry was from IIRR, Hyderabad the AICRIP – PI was not involved in the discussion of this variety. This entry exhibited yield advantage over the best varietal check (10.0%) and the required zinc content (24 ppm). Its HRR was 59.37% and it had intermediate AC of 23.3% along with moderate resistance to blast, BLB and plant hoppers. Hence, identified for Zones III (Uttar Pradesh and Odisha) and VII (Kerala).

Annexure-A

List of members participated in the VIC Committee Meeting during 54th ARGM, 2019 at ICAR-NRRI, Cuttack.

1	**Dr Dinesh Kumar, ADG (FFC)(A), ICAR , New Delhi**	**Chairman**
2	Dr D.K. Yadava, ADG (Seeds), ICAR , New Delhi	Member
3	Dr Himanshu Pathak, Director, ICAR-NRRI, Cuttack.	Member
4	Dr A K Singh, Joint Director, IARI, New Delhi	Member
5	Dr Sumit Mishra, Joint Director, DRD, Patna.	Member
6	Dr Ritesh Sharma, Principal Scientist, BEDF (APEDA), SVPUA&T Campus, Meerut.	Member
7	Dr CHM Vijaya Kumar, Director, Tierra Agrotech Pvt. Ltd. Hyd	Member
8	Shri B I Takar, Manager (P), National Seeds Corporation, Bhubaneswar	Member
9	Shri P K Nayak, Seeds Certification Officer, OSSOPCA, Bhubaneswar	Member
10	Dr S R Voleti, Director (A), ICAR-IIRR, Hyderabad	**Member Secretary**
11	Dr G Padmavathi, PI-Incharge, Plant Breeding, ICAR-IIRR, Hyderabad.	Member
12	Dr A S Hariprasad	Member
13	Dr Gururaj Katti, PS & PI, Entomology, ICAR-IIRR, Hyderabad.	Member
14	Dr D Krishnaveni, PS, Pathology, ICAR-IIRR, Hyderabad.	Member
15	Dr Gouri Shankar Laha, PS, Pathology, ICAR-IIRR, Hyderabad.	
16	Dr R Mahender Kumar, PS & PI, Agronomy, ICAR-IIRR, Hyderabad.	Member
17	Dr J Aravind Kumar, Sr. Scientist, Plant Breeding, ICAR-IIRR, Hyderabad.	Member

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6th Annual Hill Rice Research Group Meeting
SKUAST, Srinagar
(February 16th, 2019)

The 6th Annual Hill Rice Research Group Meeting" was held on 16th February 2019 at SKUAST, Srinagar. It was organized by Indian Institute of Rice Research (ICAR), Hyderabad in collaboration with AICRP (Rice) group of SKUAST.

On the behalf of Hon'ble Vice-Chancellor and as the Director Research of the SKUAST-Kashmir, **Prof. M.Y Zargar** welcomed the participants of the workshop. In his opening remarks, the worthy Director expressed the scope of hill rice in the context of its potential to improve economic and livelihoods of the marginal/ tribal farmers under hill rice ecology. He also briefed about the role and potential of "All India Coordinated Rice Improvement Programme (AICRIP)", its widespread impact on the regional and niche specific varietal adaptation in different hill zones.

The inaugural was followed by a brief welcome by **Dr. G. Katti** (Director [I/C], ICAR-IIRR, Hyderabad) who focussed on the importance of hill rice research and developmental activities. Further, he emphasized on adoption of more synergy and coordination among the collaborating hill rice centres in different zones of the country.

The technical session was formally started by **Dr. L.V Suba Rao** (Principal Scientist & Head, Plant Breeding, ICAR-IIRR Hyderabad), who presented the consolidated progress report on varietal development under Hill trials conducted during 2018-19. He also presented the list of entries promoted under different categories in different hill elevations and ecologies.

Entries promoted to 3rd of testing:
Low Altitude Northern Hills: IET 26579
Medium Altitude Hills: IET26597, IET26580, IET26588, IET26579, IET26579, IET26596 and IET26594
High Altitude Hills: IET 26591

Entries promoted to 2nd year of testing:
Northern Low Altitude Hills: IET27506, IET27498, IET27503 and 27501
Northern Medium Altitude Hills: IET27505 and IET27504, whereas IET26605 was promoted to third year of testing.

Dr. G. Katti (Principal Scientist & Head, Entomology, ICAR-IIRR) reported an overall performance of national screening nurseries of hills conducted for different insect pests in the hill ecology. It was reported that IET 27480 was promising in 3 of the 16 tests against BPH, GM and WM, while PTB 33 and RP were promising in 6 tests of the total 16 tests. The deliberations during the technical sessions resulted into different recommendations as enlisted in the following minutes of this workshop:

- ✓ It was unanimously agreed upon that materials should be tested in all ecologies for assessing the precise adaptation of the material in the initial varietal testing trials.
- ✓ It was stressed upon all the centres to increase the diversity of rice materials under wide hybridization programmes and to gear up for more crossings in each cropping year, so that there is increase in recovery and advance of elite materials.
- ✓ It was also decided that now onwards pipeline materials in F2 will also be distributed and considered for coordinated testing for early identification of elite materials.
- ✓ Entries that are dropped from coordinated programme but considered for SVRC should be intimated to Director IIRR and recommended for strict adherence to this direction.
- ✓ Timely submission of data regarding coordinated hill trials was strongly advised for further promotions and nominations for advance testing stages.
- ✓ A yield advantage of 10% should be considered as benchmark for trials conducted under stress conditions.
- ✓ Nominations must be submitted with full details pertaining to recommended or preferred zonal ecologies or altitudes.

- ✓ Coordinated trials / entries that do not flower at any specific elevations or altitudes should be reported to IIRR for technical and progressive course of action.
- ✓ Late arrival of nomination of entries has been seriously observed which inadvertently affects the timely constitution of coordinated trials and unanimously decided and directed to the cooperating centres to submit all nominations by 5th March (or by 1st week of March) as latest. Nominations received after the deadline will not be considered for any coordinated testing. Commitment of the associated breeders at different hill centres is strongly advised to follow these directions.
- ✓ It was unanimously decided and deliberated upon that collaborating hill centres should get the coordinated trials by 1st week of April positively. There will be no onus on the concerned scientist for not conducting trials, in case of delayed arrivals either due to logistic or administrative reasons.
- ✓ Update on seed despatch will be placed on the website of IIRR.
    - In the pursuit of increasing scope of testing in different altitudes, the number of voluntary centres with each funded centre were recommended to be made active as under:
    - Kashmir valley - Pombay, Wadura and Bandipora
    - Jammu - Chatha, Baderwah and Rajouri
    - HP - Malan, Palampur, Daulakuan, Sundernagar, Katrain (high altitude)
    - Almora – Majara (Talk to Pantnagar), Bageshwar (Rainfed upland)
    - Sikkim – Gangtok, Kallimpong (ME) (WestBengal) - both these in mid elevations

- ✓ It was observed that nobody attended workshop from Manipur and CAU-Imphal and explanations should be sought from the respective collaborators.
- ✓ It was further reported that there is nobody at Wangbal locations though being funded centre should be discontinued. Same problem was reported at Tripura.
- ✓ For high altitude locations testing at Upper Shillong and Katrain should be considered for paving way for CVRC.
- ✓ High altitude research station at Larnoo (Kashmir valley) to be included for cold and Blast screening.
- ✓ Acknowledgments to IIRR and AICRIP in the technology developed and publications need to be adhered with.
- ✓ Before sending proposals to DSC for notifications, prior intimation and follow up of proper channel through IIRR was directed.

STATE PRESENTATIONS

ALMORA

- ✓ Deviations were observed in following the package of practices (POP) in the yield trials and it was directed that proper POP including protective / protection measures should be strictly followed.
- ✓ It was further reported that there was no monitoring of the coordinated trials at this centre.

- ✓ Varieties released but not registered with PPV & FRA should be expedited with due intimation to Director IIRR

Khudwani

- ✓ Seed material of IET 28501 was received late in the agronomy trials.

Umea

- ✓ In acidic soils many lines from coordinated trials don't perform well.
- ✓ POP not followed properly as such observations in yield trials indicate large variations, which should not be the case.
- ✓ Discussion with soil scientist to be followed.
- ✓ More crosses needs to be attempted in the coming season.

Malan and associated centres

- ✓ Only breeding trials are conducted as no pathologist and entomologist is associated with the centre.

Upper Shillong

- ✓ Disease screening should be conducted at Upper Shillong and not at the altitude level of Barapani.
- ✓ Agronomy trials conducted at farmers field is not advisable and should be discouraged in future while due cognizance was taken that the centre is funded and should take care of these trials themselves.

General Comments

- ✓ Enough funds for Northeast and proposals may be submitted for release and utilization of these schemes especially under TSP.
- ✓ It was directed to hill centres to furnish information about tribal populations in their respective ecologies so that funds could be provided under TSP. The information may please be submitted before March so that fund release can be facilitated at the earliest.

FRONTLINE DEMONSTRATIONS (FLDs) ON RICE

Chair : Dr. S.M. Balachandran
Co-Chair : Dr. P.V.Satyanarayana
PI : Dr. Shaik N.Meera
CoPI : Dr. S. Arun Kumar
Convener : Dr. N.C. Rath

During 54th Annual Rice Group Meeting held at NRRI Campus, Cuttack a special session was organized for formulating a strategy for implementation of FLDs during ensuing season. The session was chaired by Dr. S.M. Balachandran, and Head, Crop Improvement & PS, IIRR and Co-Chaired by Dr. P.V. Satyanarayana, Principal Scientist APRRI Maruteru.

The general guidelines for effectively conducting FLDs were presented by Dr. Shaik N.Meera, Principal Scientist and Coordinator and Dr. S. Arun Kumar, Scientist, Extension and Coordinator, FLD programs.

In his presentation Dr. Arun Kumar, has categorically mentioned the FLDs program should address the problems faced by the rice farmers and how best their new technologies could fit into the local contexts. He made it clear that under the critical components no chemical fertilizer is allowed to be purchased and distributed. He suggested the scientist to identify the problems first and organize orientation training to the clientele farmers. Under FLDs preference should be given to the marginalized sections and women farmers. Well designed field board is a pre-requisite for the FLDs and it should explain everything about the FLD in a lucid manner. He also requested to reward the progressive farmers who have contributed immensely for the success of FLDs. Good reports with success stories and good photographs are the essentials components of FLDs. According to him, an ideal FLD report should contain the impact of technology, constraints faced by the farmers and feed back to the scientist who developed the technology for further refinement. He mentioned that the Ministry desired to have at least 100 FLDs on biofortified rice varieties recently released in India.

In his remark the Chair mentioned this was an important program for popularizing new varieties and hybrids. This program could be used for assessing the yield gap and addressing the production constraints.

It was emphasized that whole package of practices are to be demonstrated in the farmers' fields apart from the FLD variety/ hybrid/ technologies allotted. 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. As per the advice from the Ministry, more emphasis is 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., All the FLD cooperators were requested to submit the UCs for the previous financial year at the earliest to avoid delays in fund release for 2019-20.

In the year 2019-20, 1000 FLDs are planned with varieties (20%) hybrids (20%) and remaining will be focused in the thrust areas like pest and disease management, farmer friendly machineries etc.

Centre No.	State and agency / organization	Ecology	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 vareity	20	Dr PV Satyanaryana ,Principal Scientist (rice) Dr M. Girija Rani, Senior Scientist (GPB) Dr BNVSR 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, posses 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, Telangana & Kerala	Semi dry rice system, aerobic rice system DSR	Resource conservation technology, cost effectiveness technology, Short duration drought tolerant variety in DSR, post emergence herbicide for weed control	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
3.	Assam		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
4.	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
5.	Chhattisgarh	Irrigated	CGZR1 CGZR2 Zincorice	10	Dr Girish Chandel IGKV Raipur	Biofortified with zinc

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
6.	Chhattisgarh	Irrigated and shallow lowland	Dubraj 1, Badsahbhog selection 1, Tarunbhog selection 1, Vishnubhog selection 1, Sugandhitbhog , Indira baranidhan1,CG hybrid rice 2	30	Dr. Sandeep Bhandarkar IGKV, Raipur, Chhattisgarh sandeep_bhandarkar2002@yahoo.com 9827167044	10% over local resistant to aerobic higher productivity
7.	Chhattisgarh (IGKVV)	Rainfed Shallown Lowlands	CG RICE HYBRID 2 KRH4 TROMBAY CG DUBRAJ MUTANT 1 CG BARHASAL POHA GG MADHURAJ 55	10	Dr. Deepak Sharma Indira Gandhi Krishi Vishwa Vidyalaya, Raipur deepakigkv@gmail.com	High yielding
8.	Chhattisgarh	Upland and transplanted	Chhattisgarh Sugandithbhog & Swarna Shreya	5	Dr. Sonali kar SG College of Agriculture, Jagdalpur Bastar, CG sonalikar31@gmail.com 9424282716	Sugandithbhog-early maturity and high yield, Swarna Shreya-higher yield and drought tolerance more income to farmers
9.	Gujarat	Western region 6	Mahisagar GAR 14 (Scented variety)	15	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
10.	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	40	Dr. Pathik Kumar B. Patel Main Rice Research Centre, Navsari Agricultural University, ARU cross road, Navsari – 396450 gujaratpbp_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
11.	Himachal Pradesh	Hill	HPR 2720, HPR 2795, HPR 2880, HPR 2656 with complete POP	10	Dr. B.S.Mankotia CSKHPKV-Malan 9459083612	nnew red rice variety for irrigated and upland condition for increasing income

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
12.	Jammu & Kashmir	Hill	Shalimar rice 4 &Shalimar rice 3,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
13.	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
14.	Jharkhand	Rainfed upland	Sahbhagi Dhan Abhishek DRR Dhan 42	30	Dr B.C. Verma, Dr. S.M. Prasad Dr. S. Bhagat Dr. Sudarsha Sekhar CRURRS Hazaribagh bishash.ssac@gmail.com 9863083855, 9065343014	Higher yield resistant to abiotic and biotic stress productivity increased income
15.	Jharkhand	Midland rainfed	BVD 203 , BVS - 1, DRR Dhan 42,rice cultivation direct seeded technology	20	Dr. Krishna Prasad , i/c Rice Department of Plant Breeding & Genetics Kanke, Ranchi - 6	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
16.	Jharkhand	Rainfed lowland and mid land	DRR Dhan 42, CR Dhan-310, CR Dhan-311	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
17.	Karnataka	Irrigated	Alternate wetting and drying	5	Dr. BG Masthana Reddy, ARS, Gangavathi ARS, Gangavathi-583227, Karnataka, Koppal (dist)	Save water to an extent of 25%
18.	Karnataka	Irrigated	RP Bio 226 (State release variety 2019)	5	Dr. Mahantasivayogayya ARS, Gangavathi ARS, Gangavathi-583227, Karnataka, Koppal (dist)	High yielding, blast resistant
19.	Karnataka	Aerobic	Daksha , KMP-175 ICM	20	Dr. M. P Rajanna, Zonal Agricultural Research Station, V.C. Farm, Mandya, UAS, Bangalore, mprajanna@roaketmail.com,9945900893	The new variety Daksha (KMP-175) saves water upto 40% compare to irrigated transplanted method with yield of 4.0-4.5 t/ha
20.	Karnataka	Irrigated	Alternate wetting and drying Direct seeding in Rice	20	Dr. G. R. Dinesh, AICRIP on Rice ZARS, VC Farm, Mandya, Karnatak-571405, grdenesh@rediffmail.com, 9448980134	Saving of irrigated water, enhance the rice yield, conserving the soil

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
21.	Karnataka	Irrigated	Rice yield maximization using IPNI nutrient expert system	10	Dr. Umesh H. R, AICRIP (Rice), ZARS, VC Farm, Mandya, Karnatak-571405 umeshhr1@rediffmail.com 9481191754	15-20% increase in yield
22.	Kerala	Double cropping	Rice farm mechanization	20	RARS, Pattambi , 679 306	30% cost reduction, 20-25% yield enhancement
23.	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
24.	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
25.	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	Reductionin the weedy rice, drudgery, higher yield, enhanced quality of harvested grains
26.	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 populaiton
27.	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
28.	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)
29.	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
30.	Maharashtra	Rainfed	Karjat 10 Karjat 9	20	Dr RG Mardani RARS Karjat M.S.	High yield due to high yield farmers willing more monetary returns

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
31.	Maharashtra	Rainfed	INM	5	Dr AS Dalvi, RARS Karjat, M.S.	High yield due to high yield farmers willing more monetary returns
32.	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
33.	Maharashtra	Irrigated	Ratnagiri-8	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
34.	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
35.	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
36.	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
37.	Tamil Nadu	Irrigated	Popularization of newly released rice variety ADT 51 (15 FLDs) ADT 53(25 FLDs)	40	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 cr100g resistant to blast, moderately resistant to BLB ADT 53 – 12% higher yield
38.	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 renumeration bph and blast resistance when compared to bpt 5204 it has fine grain and cooling quality 135-140 days duration

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
39.	Tamil Nadu (IIRR)	Irrigated Upland	Latest IIRR technologies (DRR Dhan 44, DRR Dhan 45, DRR Dhan 49)	15	Dr. S. Arun Kumar Scientist, Extension Indian Institute of Rice Research Hyderabad 500 030 (In collaboration with Farmer Producer Organisations)	Higher yield, cost reduction
40.	Tamil Nadu	Irrigated	TKM 13	10	Dr A Sheeba RRS Tirur	10 % higher yield
41.	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 Dr. S. Arun Kumar Indian Institute of Rice Research Hyderabad	Higher yield, cost reduction
42.	Telangana (IIRR)	Irrigated Upland	Latest IIRR technologies (DRR Dhan 44, DRR Dhan 45, DRR Dhan 49) IPM	20	Programme Coordinator KVK Kampasagar & Indian Institute of Rice Research Hyderabad	Higher yield, cost reduction
43.	Telangana	Irrigated	Rice straw management and 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
44.	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
45.	Telangana	Irrigated	WGL 347 WGL 739	15	Dr. U Nagabushanam/ Dr B Satish Chandra RARS Warangal Telangana	Higher yield
46.	Telangana	Irrigated Ecology	SRI and water saving technologies	20	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
47.	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 enchanced productivity and income

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
48.	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
49.	Uttar Pradesh	Irrigated condition	Shiats-dhan-1, 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
50.	Uttar Pradesh	Midland irrigated	Hur-3022,hur4-3, hur-105, hur-917 drr-44,phb-71,arize 6444,inm,iwm, water saving technologies like aerobic rice SRI drum seeding double planting locally called sunda planting and replacement of old local varieties with a newly developed ones	10	Dr. VK Srivastava Professor cum Sr. agronomist Department of agronomy, Institute of Agricultural Sciences BHU, Varanasi Vksrivastava_bhu@rediffmail.com 9415819900	Additional yeild advantage by adopting by adopting the recommended practices for transplanted rice in response of inm and iwm and sunda planting ,recently drr44 has performed very well at farmers field having good weed competitive ability
51.	Uttar Pradesh (ACAES – Noida)	Irrigated	High yielding varieties	5	Dr. N. P. Singh, Director ACAES, Amity University npsingh@amity.edu	higher yield
52.	Uttarakhand	Irrigated	Latest varieties	10	Rice section, GBPUAT PANTNAGAR, US NAGAR , UTTARAKHAND ss_meher@rediffmail.com 9410120640, 7830785134	Resistant to BLB, stem borer at 135days
53.	West Bengal	Rainfed/ irrigated	MUKTA SHREE, Sukumar, Goasaba 5, Gosaba 6, Rajdeep, Kanak	30	Dr. Sangeet Sekhar Deb Rice Research Station Chinsurah, Hooghly	The technologies and varieties are supposed to increase the yield about 10 %-20% in farmers field with some value addition in grains
54.	West Bengal	RSL and upland	DHRUBA NOTIFIED 2016	5	DR. G K MALLICK & DR. VIVEKANANDA MANDI RICE REEARCH STATION , BANKURA,WEST BENGAL RRSBANKURA@GMAIL.COM 9474184953	Sampriti - higher zinc and higher iron in brown rice enhance productivity

Centre No.	State and agency / organization	Ecology	Technologies to be demonstrated	No. Of FLDs	Name and address of nodal officer	Relative advantage
55.	West Bengal	RSL and upland	Resource conservation technology Nutrient experty	10	Dr Malay Kr Bhowmick JDA Kolkatta	
56.	Across the country		Biofortified rice varieties	20	Dr CN Neeraja PS ICAR IIRR Hyderabad 040-24591285	Nutritional security
			Total	1000		

NB: These are only proposals, but not to be construed as approved. Administrative sanction will be given after getting the approval from DAC. The actual number of FLDs allotted to each centre may vary at the time of administrative approval.

A total of 1000 FLDs of 1 ha each are planned to be conducted during the year in 56 centres. 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.

RECOMMENDATIONS AND CONCLUSIONS

VARIETAL IMPROVEMENT

The following decisions were taken after deliberations:

1. For NIL confirmation, entries will be tested in appropriate duration group (AVT-1 for first year of testing and AVT-2 for second year of testing) of the recurrent parent and will be compared with recurrent parent only. For trait verification in case of abiotic stresses (drought, salinity and submergence) yield under stress will be evaluated in separate trials. For biotic stresses an exclusive NIL-NSN trials should be conducted.

2. In case of NPT trial entries that have completed three years of testing with overall/zonal mean yield of more than 7 tonnes can be tested in AVT-2 Agronomy trial.

3. In low phosphorus trial, the entries will be tested at low P centres viz., Ranchi and locations in North Eastern states. For trait verification trial will be conducted at IIRR, Hyderabad plots along with a trial in normal plots. Entries will be promoted based on the results obtained from normal plots at different centres.

4. Entries will not be considered for promotion based on single location data. As per the recommendations at least three centre data is required for promotions.

   The varietal identification committee recommended the following 11 varieties and 9 hybrids:

VARIETIES

- **Proposal No.3:IET 25856 (MTU 1223)**

  It consistently performed over the years, showed yield superiority of 8.6 % over the best varietal check, recorded high HRR (64.4%) along with intermediate AC (23.8%) and GC (42mm). Identified for **Zone III (Odisha and Bihar).**

- **Proposal No.10: IET 25997 (CR Dhan 312)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. This culture has exhibited yield superiority over the best varietal check and hybrid check in Zone V along with desirable quality (HRR – 58.0%; AC – 26.7; GC – 51 mm). Further, this variety showed moderate disease tolerance. Hence, identified for **Zone V (Maharashtra and Chattisgarh).**

- **Proposal No.12: IET 25330 (WGL 739)**

  The long bold culture, IET 25330 exhibited yield superiority of 7.5% over the best varietal check. It had moderate resistance to leaf and neck blast with desirable quality traits (HRR – 61.3%, and intermediate AC (24.5%). Therefore, the entry is identified for **Zone III (Odisha and West Bengal) and Zone VII (Tamil Nadu).**

- **Proposal No.14: IET 25692 (CR Dhan 602)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. This long slender entry exhibited yield superiority over the best varietal check (37.2%) in Zone IV with desirable quality (HRR: 59.6%; AC: 20.97%; GC: 45 mm). Further, this variety showed moderate resistance to leaf blast. Hence, identified for **Zone IV (Assam and Tripura).**

- **Proposal No.29: IET 24173 (Uttara Lakshmi)**

  A long bold grain type entry, IET 24173 exhibited yield superiority over the best varietal check and hybrid check over the years in Zones III and IV. It showed moderate disease resistance along with acceptable HRR (55.1%). Hence identified for **Zone III (West Bengal and Odisha) and Zone IV (Tripura).**

- **Proposal No.16: IET 25640 (RCPR-22-IR84899-B-183-20-1-1-1)**

  IET 25640, a short bold grain culture exhibited yield advantage over the best varietal check in multiple zones. It has high HRR (63.2%), intermediate AC (22.52%) and good disease resistance to leaf blast and sheath rot. Hence identified for **Zones II (Haryana), III (Odisha, Bihar and Jharkhand), V (Chhattisgarh) and VI (Gujarat and Maharashtra).**

- **Proposal No.27: IET 26178 (TRC 2015-5)**

  This entry is a short bold grain type with good yield advantage under aerobic conditions with good HRR (63.3%) and intermediate AC (22.2%). It also exhibited

moderate resistance to leaf blast, neck blast and sheath blight. Additionally, keeping in view lower number of varieties released in this ecology, the committee has identified IET 26178 for **Zones III (Jharkhand), V (Chhattisgarh) and VII (Karnataka).**

- **Proposal No.21: IET 25508 (NP 9359-9)**

  A short slender grain type entry IET 25508 showed the required yield advantage. It had acceptable quality with high HRR (64.8%) and intermediate AC (22.0%). Also, it exhibited resistance to brown spot and leaf blast. Hence, identified for **Zone V (Chhattisgarh) and Zone VII (Telangana).**

- **Proposal No.23: IET 26263 (MTU 1239)**

  A medium slender grain type entry IET 26263 exhibited the required yield superiority over the best varietal check (10.41%). It had very good HRR (61.7%) along with intermediate AC (24.5%). IET 26263 had moderate resistance to leaf blast and bacterial blight. Hence it is identified for **Zones V (Maharashtra) and VII (Andhra Pradesh and Tamil Nadu).**

- **Proposal No.25: IET 25489 (CR Dhan 313)**

  Since the entry was from NRRI, the Director, NRRI, Cuttack was not involved in the discussion of this variety. IET 25489 had yield superiority over the best varietal check in Zone V. It had very high HRR (66.4%) and intermediate AC (23.9%) with moderate resistance to BLB and blast. Hence identified for **Zone V (Maharashtra and Chhattisgarh).**

- **Proposal No.28: IET 26383 (DRR Dhan 54)**

  Since the entry was from IIRR, Hyderabad the AICRIP – PI was not involved in the discussion of this variety. This entry exhibited yield advantage over the best varietal check (10.0%) and the required zinc content (24 ppm). Its HRR was 59.37% and it had intermediate AC of 23.3% along with moderate resistance to blast, BLB and plant hoppers. Hence, identified for **Zones III (Uttar Pradesh and Odisha) and VII (Kerala).**

HYBRIDS

- **Proposal No. 6:IET 25746 (KPH 471)**

  The long slender hybrid exhibited yield superiority over best varietal check and hybrid check in zone II and zone VII. It showed desirable quality traits: HRR (60.4%) and intermediate AC (24.6%). Hence identified for **Zone II (Haryana, Punjab, Uttarakhand) and Zone VII (Telangana, Karnataka, Kerala).**

- **Proposal No.8: IET 24931 (**RH 9000 Plus**)**

  The culture exhibited consistent yield superiority over best varietal check and hybrid check in Zone V with desirable quality: HRR (63.80%) and intermediate AC (23.5%) along with moderate disease resistance. Hence identified for **Zone V (Maharashtra).**

- **Proposal No.9: IET 25764 (**MP 3030**)**

  The proposed culture with long slender grains exhibited yield superiority over best varietal and hybrid checks in Zone II and Zone VI with desirable quality: HRR (64.70%) and intermediate AC (24.2%) and moderately resistant to leaf blast and false smut. Hence identified for **Zone II (Haryana, Uttarakhand) and Zone VI (Maharashtra, Gujarat).**

- **Proposal No.11: IET 25785 (ADV 1603)**

  IET 24698, a long bold hybrid culture recorded consistent yield superiority over the best varietal check and hybrid check over the years. It also exhibited moderate disease resistance to BLB, leaf blast and neck blast. It possessed desirable quality: HRR – 60.4% with intermediate AC (23.07%). Therefore, it is identified for **Zone II (Haryana, Jammu & Kashmir and Uttarakhand).**

- **Proposal No.13: IET 25269 (MEPH-126)**

  The medium slender hybrid, IET 25269 showed yield advantage over the best varietal and hybrid checks in two zones (III and VI). It had good HRR (58.6%) and intermediate AC (24.7%) along with moderate resistance to BLB, leaf and neck blast. Based on its yield performance, disease resistance and quality, this culture is identified for **Zones III (West Bengal, Bihar and Odisha) and VI (Maharashtra).**

- **Proposal No.17: IET 26198 (MEPH-134)**

  A long slender hybrid, IET 26198 showed yield superiority over the best varietal check and hybrid check over the three years of testing in Zone III. It has disease resistance along with acceptable quality (HRR: 58.4% and intermediate AC: 24.3%). In Uttar Pradesh and Jharkhand, this entry was tested in one location only. Hence identified for **Zone III (Bihar).**

- **Proposal No.18: IET 25728 (US 380)**

  This medium slender grain hybrid entry IET 25728 exhibited yield advantage over the best varietal check and hybrid check in the three years of testing in Zone V only. It had both moderate disease (BLB) and pest (BPH and WBPH) resistance. It is identified for **Zone V (Chhattisgarh and Madhya Pradesh).**

- **Proposal No.20: IET 25804 (US 303)**

  The medium slender grain type entry IET 25804 exhibited yield superiority over the best varietal check and hybrid check. It also showed acceptable quality: HRR: 63.3% and intermediate AC: 20.92% with moderate resistance to pest and disease. It was tested only at one location in Madhya Pradesh but exhibited yield advantage over the zonal and hybrid check. Hence identified for **Zone V (Maharashtra).**

- **Proposal No.24: IET 25793 (MEPH-129)**

  The medium slender grain type entry IET 25793 exhibited yield advantage over the best varietal check (10.0%) and hybrid check (9.0%). It had good HRR (59.9%) and intermediate AC (24.75%) along with resistance to BPH. It has been identified for **Zone VI (Maharashtra).**

AGRONOMY

- 15 cultures of different groups were identified as efficient cultures (IET-25121, IET-26356, IET-25746, IET-26027, IET-25997, IET-25785, IET-25269, IET-26263, IET-25793, IET-25826, IET-22836, IET-25059, IET-26168, IET-26383, IET-26375) based on GYEI and reduction in nutrient application.
- Mechanical transplanting resulted in the highest grain yield (5.63 t/ha) with reduced labour requirement.
- Cost of cultivation under flooding was higher across all the locations (Rs. 33443 to Rs. 45850/-) and there was a saving of Rs. 3800/- per ha. Similarly water input also saved to the tune of 70 cm/ha.
- There is an increase of 11% grain yield due to iron coating of seeds in direct seeded rice situation.

SOIL SCIENCE

- RDF + FYM recorded maximum yield at all three locations and FYM alone was on par to RDF in *kharif* at MND and TTB. Imbalanced nutrition resulted in significant yield loss at all 3 locations.
- Gypsum application in sodic soils and liming in acid soils in conjunction with NPK fertilization improved rice yields. IIRR varieties viz., DRR Dhan 40, 41, 42, 45 and 46 performed well under sodic soil conditions and US-312, Binadhan 8, Binadhan-75 and Maheshwari were found promising under acid soil conditions.
- Nutrient Expert recorded highest grain yields in about 70% of farmers' sites tested with a higher dose of N and K and lower dose of P thereby saving the costly P fertilizers.

PLANT PHYSIOLOGY

Silicon

- Silicon application had resulted in 9% increase in mean grain yield. Significant differences amongst the locations were observed. The increase in grain yield varies with genotypes. Maximum increase was observed in US-313 and KRH-4. Application silicon to water stressed crop reduced the negative impact of water stress.

Drought tolerance

- Out of 30 rice genotypes tested only Govind, IET27514, IET27522 and IET27515 showed relative tolerance based on drought index values.

Heat Tolerance:

- High temperature reduced the mean grain yield by 25%. Based on % reduction in yield under elevated temperature condition IET 27680 and IET 25713 showed relative tolerance to high temperature. Based on yield stability index and Amme Susceptibility Index (ASV) IET 26468 followed by IET 27477 and IER 24911 can be identified as high temperature tolerance.

MAS

- Out of 21 entries screened for multiple abiotic stress tolerance none of the entries showed tolerance to all the stresses. However, IET 26487, IET 26493 and BPT 2782 showed tolerance to atleast two abiotic stresses.

RNUE

- The trail was conducted with three nitrogen treatments Based on yield and stability values Varadhan x BPT5204/10 and Sampata x Jaya/3 andSampada x Jaya/3, Sanpada X Jaya/2 and Varadhan x BPT5204/10 can be identified as stable genotypes under 0 Kg N and 50 kg N ha^{-1}

Low Light Stress:

- Out of 15 AVT entries tested at 7 locations only IET 27559 showed relative tolerance to low-light stress. All other entries suffered yield loss by >45%.

ENTOMOLOGY

- The following entries were found promising for different rice pests

Pest	Entries
Brown planthopper (BPH)	RP 5995 Bph 17-5 HWR 16 (IR 73382-80-9-3-13-2-2-1-3B)
Gall midge Biotype 1 & 5	SKL 07-11-117-50-65-60-267
Leaf folder	HWR 24 (IR 73382-7-12-1-1-3-B) HWR 3 (IR 71037-9-7-B)
Stem borer	IIRR- Bio-SB-9 IIRR-Bio-SB-3 IIRR Bio-SB-2 RP 5587-B-B-B-209 RP 5587-B-B-B-258-1

- Two newer insecticide formulations Spinetoram 6% + Methoxyfenozide 30% and Triflumezopyrim 106 SC were found compatible with the fungicides Hexaconazole 5% ai and Tricyclazole 75% ai and hence can be used in combination.
- Yield loss model has been developed for assessment of actual losses caused by white ear damage by stem borer with 97.6% accuracy.

PLANT PATHOLOGY

- Multiple disease resistant entries viz. IET # 28014, 28015, 26027, 27077, 27280 and 25618 having resistance to more than one disease identified can be used in resistance breeding programme.
- The combination fungicide azoxystrobin 18.2% + difenoconazole 11.4% w/w SC @ ml/l is effective against sheath blight and sheath rot.

Appendix-1

Particulars of Zones, States and test Locations

Region / State	Locations	
	Funded	**Voluntary**
ZONE I – HILLY AREAS		
North Western Hills		
Jammu Kashmir	Khudwani (1)	Rajouri, Wadura, Bandipore, Pombay (4)
Himachal Pradesh	Malan (1)	Palampur, Dhaulakhan (2)
Uttarakhand		Almora, Bageshwar, (2)
North Eastern Hills		
Manipur		Imphal-CAU (1)
Nagaland	Kohima (1)	
Sikkim		Gangtok (1)
Meghalaya	Upper Shillong (1)	ICAR-Umiam, CAU-Umiam (2)
West Bengal		Kalimpong (1)
Southern Hills		
Karnataka		Sirsi (1)
ZONE II – NORTHERN		
New Delhi		IARI- New Delhi (1)
Uttarakhand	Pantnagar (1)	
Punjab	Ludhiana (1)	Gurdaspur, Kapurthala, Rauni (3)
Haryana	Kaul (1)	Karnal (CSSRI), Jind, Rohtak, Kurukshetra, Panipat (5)
Uttar Pradesh	Nagina, Kanpur (2)	
Jammu Kashmir	Chatha (R.S. Pura) (1)	
Rajasthan	Kota (1)	Banswara (1)
ZONE III – EASTERN		
Orissa	Jeypore, Chiplima (2)	Bhubaneswar, NRRI (Cuttack), Ranital (3)
Bihar	Bikramganj (Patna), Pusa (2)	Patna- ICAR, Sabour(2)
Jharkhand	Ranchi (1)	Hazaribagh, Gharkatanga (2)
West Bengal	Bankura, Chinsurah (2)	Canning, Pundibari,Chakdha,Hathwara (4)
Uttar Pradesh	Masodha ,Ghaghraghat, Varanasi (3)	Lucknow, BEDF-Modipuram, Gautam Budha Nag'ar, SVBPUAT- Meerut (4)
ZONE IV – NORTH EASTERN		
Assam	Titabar (1)	Gerua, Karimganj (2)
Manipur	Wangbal (1)	Lamphalpat, (1)
Tripura	Arundhutinagar (1)	Lembucherra (1)
ZONE V - CENTRAL		
Madhya Pradesh	Rewa (1)	Waraseoni, Jabalpur (2)
Chhattisgarh	Raipur, Jagadalpur (2)	Bilaspur, Ambikapur (2)
Maharashtra	Sakoli (1)	Sindewahi (1)
ZONE VI - WESTERN		
Maharashtra	Karjat, Tuljapur (2)	Panvel, Radhanagari, Shirgaon, Palghar Phondaghat, Vadagaon, Parbhani, (7),
Gujarat	Nawagam, Navsari (2)	Derol, Vyra, Danti, Dabhoi, (4)
Goa		Goa (1)
ZONE VII - SOUTHERN		
Andaman & Nicobar		Port Blair (1)
Andhra Pradesh	Maruteru (1)	Ragolu, Bapatla,Machilipatnam,Nellore,(4)
Telangana	Rajendranagar, Warangal (2)	IIRR, Jagtial, Kunaram, Rudrur, Kampasagar (5)
Tamil Nadu	Aduthurai, Coimbatore (2)	Trichy, Annamalainagar, Tirur, Gudalur (4)
Kerala	Moncompu, Pattambi (2)	Vyttila (1)
Karnataka	Mandya, Mugad, Ponnampet, Brahmavar, Gangavati (5)	Sirsi, Kathalgere, Malagi (3)
Puducherry	Kurumbapet (1)	Karaikal (1)
Total locations	**45**	**79**

Underline :ICAR Institutions

Appendix-2

List of Coordinated Trials, Kharif 2019

Centre:

Ecosystem	AVT 2	AVT 1	IVT	IHRT
Upland- DS		AVT 1-E DS	IVT-E-DS	
Rainfed shallow		AVT 1-RSL	IVT-RSL	
Semi-deep water		AVT 1-SDW	IVT-SDW	
Deep water			IVT-DW	
Early – TP	AVT2-E TP	AVT1-E TP	IVT-E TP	IHRT-E
Irrigated Mid Early		AVT 1-IME	IVT-IME	IHRT-ME
Medium		AVT1–IM	IVT-IM	IHRT-IM
Late		AVT1–Late	IVT–Late	
Boro		AVT 1-Boro	IVT-Boro	
Basmati		AVT1-BT	IVT-BT	
Aromatic short grain			IVT-ASG	
Saline alkaline		AL & ISTVT	AL & ISTVT	
		CSTVT	CSTVT	
Hills	AVT 2-E (H)	AVT1-E (H)	IVT-E(H)	
	AVT 2-M (H)	AVT1-M (H)	IVT-M(H)	
		AVT1-U (H)	IVT-U(H)	
			IVT-LRH	
Aerobic		AVT1-Aerobic	IVT-Aerobic	
Near Isogenic lines (Sub)		AVT 1-NIL		
Near Isogenic Lines (Drt).		AVT 1-NIL		
Near Isogenic Lines (Blast)	AVT 2-NIL	AVT 1-NIL		
Near Isogenic Lines (CS)		AVT 1-NIL		
Bio-fortification		AVT 1-Biofort	IVT-Biofort.	
Medium Slender	AVT 2-MS	AVT 1-MS	IVT-MS	IHRT-MS
Low Phosphorous		AVT 1- LPT	IVT - LPT	
Low Nitrogen		AVT 1- LNT	IVT - LNT	

Appendix 3 a

Seed Requirement for New Nominations, Kharif 2019

Trials		Quantity
Early, Mid-early, Medium, Short Grain, Biofortification, MS Grain, Aerobic	:	12 Kg
Shallow Water, Saline/Alkaline, Boro, Basmati, Isogenic Semi-deep, deep water,Hill and Late	:	8 kg

Note:

1. **Please specify clearly on the label, whether the seed is a new nomination OR a repeat entry.**
2. **For repeat entry please give the IET No. along with trial name and pedigree.**
3. **When supplying the seed of check varieties, please label the name of the checks clearly in CAPITAL LETTERS**

Appendix 3 b

Nominations for AICRIP Trials, Kharif 2019*

Please provide the **mandatory details** of the nominations such as cross combination, duration, performance against check varieties, additional information viz., pest/disease reaction, quality etc., for all the new nominations in the following proforma;

Trial	Designation/ Pedigree	Cross Combination#	Days to 50% flow.		Grain type	Local trial yield (kg/ha)**		Quality Characters	Pest/disease reaction@		Remarks (any other special character)
			I year	II year		I year	II year		I year	II year	
	(Name of National Check)										
	(Name of Regional Check)										
	(Name of Local Check)										
	CD (0.05)										
	CV%										

* : **Without the details especially cross combination and source of material the entries will not be included in IVT trials;**

**: Yield as compared to check varieties. It is mandatory to give the yield of check varieties along with the nominations from local (station) trials.

: Source of material (IRRI-INGER, IRRI Collaboration; any other within country programme;

@: Artificial / natural screening please specify (use more sheets if required to fill the details)

Name of the Centre:

Signature of the Breeder:

Name & Designation:

Complete Address:

Date:

(Signature of Breeder)

Appendix 4

Submission of Variety Identification proposal to VIC meeting to be held in Annual Rice Research Group Meetings – 2020

1.	For entries which have been tested for 3 years	:	Last date of receipt: **31st December, 2019**
2.	For entries which are in 3rd year (final) of testing.	:	Last date of receipt: **10th March, 2020**
3.	No. of copies for submission	:	30
4.	The proposal should be duly signed and forwarded through proper channel		
5.	Weighted average of yield data to be computed against the checks and qualifying varieties for Table 1 and the guidelines and the format for preparation of the proposal should be adhered to.		
6.	The proforma for submission of VIC proposal is available in IIRR Web site in the draft proceedings. (www.drricar.org)		

Appendix 5

Submission of CVRC variety proposal for Central Sub Committee on Crop Standards, Notification & Release of Varieties (CSC on CSN&RV) for Meeting during 2019

1.	For those which are identified by VIC	:	Latest by 30th June, 2019
2.	Number of copies for submission **35 copies of the proposal should be sent to:** **5 copies of the proposal should be sent to:**	:	40 Copies Deputy Commissioner (QC)-cum Member Secretary of CSC on CSN&RV Ministry of Agriculture & Cooperation F212, Shastry Bhavan **NEW DELHI-110002** The Director ICAR-Indian Institute of Rice Research Rajendranagar **HYDERABAD-500030**
3.	Weighted average of yield data to be computed against the checks and qualifying checks for Table 1 and the guidelines and the format for preparation of the proposal should be adhered to.		
4.	Seed material should be deposited with NBPGR and acknowledgement to be furnished duly with the proposal, by giving the IC Number in the column.		
5.	Complete morphological description of the proposed variety given in VIC proposal must be included in the CVRC proposal.		
6.	The proforma for submission of CVRC proposal is available in IIRR Web site		

Appendix 6a

Proceedings of the meeting of the committee constituted to deliberate on formulation of criteria for nomination of entries under Advanced Variety Trial 1-Near Isogenic Lines (AVT1-NIL) of AICRIP

As per the directions of Dr. S.N. Shukla, Assistant Director General (FFC), ICAR, a committee was constituted for the above mentioned purpose during the 44th Annual Rice Research Group Meeting held at ANGRAU, Hyderabad during May 2009. The members of the committee met on 11th May 2009 at Seminar Hall I of ANGRAU Auditorium, Hyderabad with Dr. M.P. Pandey, Vice Chancellor, IGAU, Raipur as Chairman and Dr. N. Shobha Rani, PI, Varietal Improvement programme, AICRIP for discussion and finalization of criteria for nomination of entries under AVT1-NIL trial of AICRIP.

The following members attended the meeting. Dr. J.L. Dwivedi, Dr. K.V. Prabhu, Dr. A.K. Singh, Dr. G.J.N. Rao, Dr. J.N. Reddy, Dr. P.K. Agarwal, Dr. N. Sarla, Dr. S.M. Balachandran, Dr. C.N. Neeraja, Dr. R.M. Sundaram, Dr. P. V. Satyanarayana, Dr. S. Manonmani.

Dr. M.P. Pandey welcomed the participants and informed that a set of guidelines for nomination and testing of NILs have been framed by a committee constituted by Ministry of Agriculture in the year 2007 and approved by DDG (CS), ICAR. The present meeting has been convened to mainly discuss issues related to operationalizing the guidelines.

The committee examined the guidelines and gave the following recommendations to facilitate the implementation of the guidelines in a practical manner.

1. **Choice of recurrent parent**: The recurrent parent selected for the marker-assisted breeding programs should be a notified variety/parental line of a hybrid which is widely cultivated and accepted by farmers which has been suffering some production bottlenecks or lacking some traits that can be improved to add value to it. For this purpose, the selection of the recurrent parent for development of NILs under AICRIP is to be decided by a committee identified by Project Director for which approval of DDG (CS), ICAR is to be obtained. Further the recurrent parent needs to be selected with appropriate concurrence of the concerned breeder/organization/institution wherever applicable.

2. **Conformity of the NILs to the recurrent parent**: The breeder has to substantiate the proposed near isogenic lines (NILs) for its conformity to the parental variety with appropriate phenotypic data such as morphological and DUS data and molecular marker data before nomination for trial. In order to ensure this, the breeder has to provide details in terms of list of all the morphological/DUS characteristics for which the NILs are similar to and different from the recurrent parent at the time of nomination of the NILs. The NILs should definitely not be inferior to the recurrent parent in terms of yield related traits.

The NIL should have minimum two phenotypic characters (which can be easily assessed in the field) for the purpose of its identification and distinction from the parental variety. This will facilitate seed certification agency/seed law enforcement authority in the certification process.

The breeder nominating entries under AVT1-NIL should enclose the list of molecular markers used for marker-assisted breeding including those used for both foreground and background selection. The NILs should have a minimum of 80% introgression as estimated from parental polymorphic SSR markers through background selection. A minimum of 6 parental polymorphic markers per chromosome should be used for this estimation (i.e. a minimum of 96 parental polymorphic markers covering the entire genome).

The breeder nominating entries under AVT1-NIL trial should furnish details in a prescribed proforma at the time of nominating the entries. A committee constituted by the Project Director will examine the proposal and approve/reject the nominations.

3. **Testing/evaluation of NILs**: Under AICRIP, the NILs would be tested along with the recurrent parent as check for two years to verify the traits that are introgressed. For yield purposes, the NILs has to be compared with the recurrent parent variety to establish its performance vis-à-vis parent variety. For validation of the introgressed trait, the NILs have to be tested along with donor parent, recurrent parent and appropriate checks. The NIL testing has to be carried out under natural and artificial conditions (where pest/disease/stress resistance is targeted) and other traits following standard experimental procedures and techniques along with the recurrent parent. The test centres and the experimental layout should be decided by the Project Directorate on a case to case basis based on the nominations.

4. **Monitoring of AVT1-NIL trial**: The final trait verification would be based on the recommendation of the monitoring team constituted by the Project Director for such trials. The monitoring of the trials is mandatory. the monitoring committee should involve at least one specialist associated with the target trait. Monitoring needs to be stringently carried out by the monitoring team both for the trait introgressed in the NILs and for equivalence to the recurrent parent.

5. **Identification, notification and release of NILs**: The NILs which have successfully completed two years of testing under AVT1-NIL as per the guidelines/criteria mentioned above should be identified, released and notified as a new variety.

Appendix 6b

Proceedings of the meeting of the Committee constituted to deliberate on revision of criteria for nomination and evaluation of entries under Advanced Variety Trial -Near-Isogenic Lines (AVT-NIL) of AICRIP during 52nd ARGM held at AAU, Jorhat.

As per the directions of Dr. J.S. Sandhu, Deputy Director General (Crop Sciences), ICAR, a committee was constituted for the above mentioned purpose during the 52nd Annual Rice Research Group Meeting held at Assam Agricultural University, Jorhat, Assam during 8-11, April 2017. The members of the committee met on 10th April 2017 at Board Room of AAU under the chairmanship of Dr. M.P. Pandey, Former Vice Chancellor, IGKV, Raipur and BAU, Ranchi for discussion on revision of criteria for nomination of entries under AVT1-NIL trial of AICRIP. It is to be mentioned that the criteria were formulated earlier by a committee constituted by ICAR under the chairmanship of Dr. M.P. Pandey during May 2009 in the 44th Annual Rice Research Group Meeting held at ANGRAU, Hyderabad.

The following dignitaries attended the meeting.

1. Dr. M. P. Pandey (Chairperson)
2. Dr. I.S. Solanki, ADG (FFC), ICAR, New Delhi (Member)
3. Dr. P. K. Agarwal, ADG (NASF), ICAR, New Delhi (Member)
4. Dr. Kuldeep Singh, Director, ICAR-NBPGR, New Delhi (Member)
5. Dr. A.K. Singh, Head, Division of Genetics, ICAR-IARI, New Delhi (Member)
6. Dr. P.V. Satyanarayana, Director, APRRI, Maruteru, AP (Member)
7. Dr. S. Robin, Dean (PGS), TNAU, Coimbatore (Member)
8. Dr. Ish Kumar, President (R & D), Rasi Seeds, Hyderabad (Member)
9. Dr. S.K. Pradhan, Principal Scientist (Plant Breeding), ICAR-NRRI, Cuttack (Member)
10. Dr. T. Ram, Principal Scientist (Plant Breeding), ICAR-IIRR, Hyderabad (Member)
11. Dr. R.M. Sundaram, Principal Scientist (Biotechnology), ICAR-IIRR, Hyderabad (Member Secretary)

Dr. Jyothi Badri, Scientist (SS, Plant Breeding), ICAR-IIRR, Hyderabad and Dr. R. Abdul Fiyaz, Scientist (SS, Plant Breeding), ICAR-IIRR, Hyderabad assisted in recording of the proceedings.

Dr. M. P. Pandey welcomed the participants and informed them that the meeting has been constituted specifically by ICAR to examine and revise the criteria for nomination of entries under AVT1-NIL trials, which was earlier set by a committee in 2009.

The committee examined the existing guidelines and criteria and gave the following recommendations to facilitate the evaluation of NILs in AICRIP trials in a pragmatic manner broadly under the following five categories.

1) Choice of the recurrent parent: The recurrent parent selected for the marker-assisted breeding programs should be a notified popular variety/parental line of a hybrid, which has been suffering from some production bottlenecks or lacking some traits (particularly biotic and abiotic stress resistance/tolerance) that can be improved to add value to it. In case of biotic stress resistance, the choice of gene combinations selected for deployment in the recurrent parent should be based on the pest population/biotypes and/or pathogen population/race composition prevalent in the States/Zones for which the recurrent parent was originally released. The recurrent parent needs to be selected with appropriate concurrence of the concerned parent Organization/Institute.

2) Conformity of the NILs to the recurrent parent: The breeder has to substantiate the proposed NILs for their conformity to the parental variety/genotype (i.e. the recurrent parent) with appropriate phenotypic data such as morphological trait data/DUS trait data and molecular marker data before nomination for trial. In order to ensure this, breeder has to provide details, in terms of list of all the morphological/DUS characteristics for which the NILs are similar/ different from the recurrent parent at the time of nomination of the NILs. The NILs must be statistically at par or superior to the recurrent parent in terms of grain yield.

   The breeder nominating the entries under AVT1-NIL should enclose the list of molecular markers used for marker-assisted breeding including those used for foreground, recombinant and/or background selection. The NILs should have a minimum of 90% recovery of the recurrent parent genome with respect to the parental polymorphic co-dominant markers (like SSRs/SNPs) analyzed. A minimum of 400 co-dominant markers (i.e. ~ 1 marker per Mb), which are distributed uniformly across the rice genome should be used for parental polymorphism analysis.

   The breeder nominating the entries under AVT1-NIL trial should furnish details in a prescribed proforma at the time of nominating the entries. A committee constituted by Director, ICAR-IIRR will examine the proposal and approve/reject the nominations.

3) Testing/evaluation of NILs: Under AICRIP, the NILs would be tested along with the recurrent parent as check for two years (i.e. AVT1-NIL and AVT2-NIL) to verify the traits that are introgressed. For yield purposes, the NILs have to be compared with the recurrent parent variety to establish its performance vis-à-vis parent variety/genotype (i.e. the recurrent parent). For validation of the introgressed trait, the NILs have to be tested along with donor parent, recurrent parent and appropriate checks. The testing of NILs has to be carried out under natural condition in the target locations/hot-spots and under artificial conditions (in case of pest/disease/stress resistance or tolerance) and other target traits including agronomic and quality traits following standard experimental procedures and techniques along with the recurrent parent. The test centres and the experimental layout should be decided by the Director, ICAR-IIRR on a case to case basis, depending on the lines nominated.

4) Monitoring of AVT1-NIL trial: The final trait verification would be based on the recommendations of the monitoring team constituted by Director, ICAR-IIRR for such trials. The monitoring of the trials is mandatory and the monitoring committee should involve at least one specialist associated with the target trait.

Monitoring needs to be stringently carried out by the monitoring team both for the trait introgressed in the NILs and for equivalence to the recurrent parent.

5) Identification, notification and release of NILs: The NILs, which have successfully completed two years of testing under AVT1-NIL as per the guidelines/criteria mentioned above should be identified, released and notified as a new variety only for the States/Zones in which the recurrent parent has been notified and released. These criteria will be applicable for entries nominated from Kharif 2017 onwards.

Proforma for nominating entries under AVT1-NIL trial of AICRIP

Trial	Designation	Cross combination	Target trait introgressed	Days to 50% flowering		Grain type and quality characteristics		Local yield trial (kg/ha)#		Reaction for target trait introgressed			No. of markers used for background selection and No. of markers which have become homozygous for recurrent parent genome	Percentage recurrent parent genome recovery	No. of traits for which the recurrent parent and NIL are similar*	No. of traits for which the recurrent parent and NIL are different*
				Recurrent parent	NIL	Recurrent parent	NIL	Recurrent parent	NIL	Donor parent	Recurrent parent	NIL				

average of two seasons yield data

*****a separate table showing a comparison between the recurrent parent and NIL with respect to morphological traits/DUS traits needs to be enclosed

Appendix 7

Proforma for Submission of Proposal for Identification of Crop Varieties/ Hybrids at workshops/State Varietal Identification Committee meetings

Content

S. No. Item

Summary of the Proposal (in bullets only)

Proforma for Submission of Proposal for Identification of Crop Varieties/ Hybrids at Workshops

1	Name of the crop and species			
2	a)Name of the variety under which tested in the AICRIP trials			
	b) Proposed name of the variety			
3	Sponsoring institute			
4	a)Institution or agency responsible for developing variety (with full Address)			
	b)Person name, who helped developing variety			
	Developers			
	Collaborators			
5	a)Parentage (with details of pedigree, including the source from which variety/inbred/A,B and R lines of hybrid have been developed)			
	b)Source of the material in case of introduction			
	c)DNA profile of variety/hybrid/inbred/A,B,R lines of the hybrid vis-a vis check variety/line			
	d)Breeding method used			
	E)Breeding objective			
6	State varieties which most closely resemble the proposed variety in general characters			
7	Recommended production ecology (rainfed/irrigated; high/low fertility; season)			
8	Specific area of its adaptation (zones and states for which variety is proposed) and the recommended production ecology			
9	Description of hybrid/variety			
	a)Plant height			
	b)Distinguishing morphological characters			
	c)Maturity (range in number of days) (from seedling/transplanting to flowering, seed-to-seed)			

	d)Maturity group (early, medium and late, wherever such classification exists)			
	e)Reaction to major diseases under field and controlled conditions (reaction to physiological strains/races/pathotypes/bio-types is to be indicated, wherever possible)			
	f)Reaction to major pests (under field and controlled conditions, including storage pests)			
	g)agronomic features (e.g., resistance to lodging, shattering, fertilizer responsiveness, suitability to early or late sown conditions, seed rate, etc.			
	h)Quality of produce a)Grain quality b)Fodder quality i) Reaction to Stresses			
10	Description of parents of hybrid	A line/ inbred 1	B line/ inbred 2	R line
	a)Plant height (cm)			
	b) Distinguishing morphological characters			
	c)Days to flowering			
	d) Days to maturity (range in number of days-from seed-to-seed)			
	e) Is there any problem of synchronization? If yes, its method to overcome			
	f)Reaction to major diseases (under field and controlled conditions, reaction to physiological strains/races/bio-types/pathotypes to be indicated wherever possible)			
	g) Reaction to major pests (uder field and controlled conditions, including storage pests)			
	h)Agronomic features (e.g., resistance to lodging, shattering fertilizer responsiveness, suitability to early or late-sown conditions, seed rate, etc.)			
	i)Reaction to stresses			
11	a)Yield data in the coordinated trials (breeding, agronomy, pathology entomology, quality etc) and regional/inter regional district trials year-wise (level of fertilizer application, density of plant population and superiority over local control/standard variety) to be indicated (to be attached)			
	b)Yield data from national demonstration/large-scale demonstrations(to be attached)			
12	a)Agency responsible for maintaining the breeder seed			
	b)Quantity of breeder seed in stock (kg) Variety/A line/B line/R line/Hybrid			
13	Specific recommendations, if any, for seed production (e.g., staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production)			
14	Vivid presentation (field view, close-up of a single plant and seeds/economic parts)			
15	Package of practices along with attainable yield levels			
16	Any other pertinent information			

Signature of All Contributors

Signature of the Head of the Institution

Checklist for Proforma for Submission of Proposal for Identification of Crop Varieties/ Hybrids at Workshops

Details/documents	**Attached**	
Parentage with details on pedigree, including the source from which variety/inbred/A,B and R lines of the hybrid has been developed	YES	NO
Source of the material in case of introduction (IC/EC numbers provided by the NBPGR)	YES	NO
Flow chart of details of development of variety/parental lines of hybrids	YES	NO
Molecular/DNA profile of variety/hybrid/A,B,R lines of the hybrid vis-à-vis check variety/line (details of unique amplicons that distinguish markers) with photographs	YES	NO
Detailed description of the parental lines of the hybrid	YES	NO
Yield data & other data on diseases, insect-pests, quality,etc. from the coordinated trials	YES	NO
Yield data from the national demonstration/large-scale demonstrations	YES	NO
Specific recommendations, if any, for seed production (eg., staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production etc.)	YES	NO
Vivid presentations (field view, close-up of a single plant and seeds) with photographs of the Variety)	YES	NO
Package of practices	YES	NO
Proforma signed by all co-authors and Head of Organization	YES	NO
Any other pertinent information	YES	NO

Signature of the Head of the Institution

Table 1: Summarized yield data of the coordinated varietal trials

Name of the proposed variety/hybrid: Adaptability Zone:
Production Conditions:

Item	Year of testing	No. of trials/ Locations	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qualifying variety*		
								Var.1	Var.2	Var.3
Mean yield (q/ha) a)Zonal b)Across zones (if appplicable)	1st year 2nd year 3rd year									
	Weighted mean									
Percentage increase or decrease over checks & qualifying varieties Frequency in the top three groups (pooled for three years)	1ST year 2nd year 3rd year Weighted mean									

Note: Qualifying variety is one which has completed three years of testing in the coordinated trials; Centre-wise and year-wise data must be appended, otherwise proposal will not be considered

Table 2. Adaptability to agronomic variables

Name of the proposed variety/hybrid: Adaptability Zone:
Production Conditions:

Nature of experiments	No. of trials/locations	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qualifying variety*		
							Var.1	Var. 2	Var. 3
Sowing date experiments	Yield (q/ha) under recommended showing date, Percentage gain or loss when sown	(i)Early (ii)Normal (iii)Late							
Fertilizer experiments	Yield (q/ha) under recommended dose Percentage gain or loss under other doses	(i)F0 (ii)F1 (iii)F2							
Irrigation experiments (wherever applicable)	Yield (q/ha) with adequate irrigation Percentage gain or loss with irrigation level	(i)Level 1 (ii)Level 2 (iii)level 3							

Note: specify each date of sowing, fertilizer level and number of irrigations at i, ii, iii

Table 3. Reaction to major diseases

Name of the proposed variety/hybrid: Adaptability Zone:
Production Conditions:

Disease name		Item	Proposed variety	National check 1	Zonal check 2	Local Check3	Latest released check 4	Qualifying variety*		
								Var. 1	Var.2	Var. 3
Disease 1	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								
Disease 2	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								
Disease 3	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								
Disease 4	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								

Table 4. Reaction to insect-pests

Name of the proposed variety/hybrid Adaptability Zone:
Production Conditions:

Pest name		Item	Proposed variety	National check 1	Zonal check 2	Local Check 3	Latest released check 4	Qualifying variety*		
								Var. 1	Var.2	Var. 3
Pest 1	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								
Pest 2	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								
Pest 3	Natural	1st year 2nd year 3rd year								
	Artificial	1st year 2nd year 3rd year								

Table 5. Data on the quality characteristics

Quality characteristics	Item	National check 1	Zonal check 2	Local Check 3	Latest released check 4	Qualifying variety*		
						Var. 1	Var.2	Var. 3
Parameter-1								
Parameter-2								
Parameter-3								
Parameter-4								

Note: First Specify parameters at 1 to 4 under first column

Table 6. Data on the other important characters

Name of the proposed variety/hybrid: Adaptability zone:
Production conditions:

S.No		Item	Proposed variety	National check 1	Zonal check 2	Local Check 3	Latest released check 4	Qual. Var. 1	Qual. Var.2	Qual. Var. 3
1	Plant height	1st year 2nd year 3rd year								
2	Days to flowering	1st year 2nd year 3rd year								
3	Days to maturity	1st year 2nd year 3rd year								
4	1000-grain weight	1st year 2nd year 3rd year								
5	Lodging	1st year 2nd year 3rd year								
6	Others	1st year 2nd year 3rd year								

Guidelines for Filling-up Proforma for Submission of Proposal for Identification of Crop Varieties/Hybrids during Workshops

1. Name of the crop and the species : The name given to the variety may be indicative of crop name, institute name/code, and number, if any.
2. Name of the variety under which tested : This should include the name under which the variety was tested in the coordinated trials.
3. Proposed name of the variety : This should include the name of the variety that is proposed for its commercial use as per the existing guidelines.
4. Sponsoring institute : This should include the name of the institute/organization that sponsoring the variety
5. Institution or agency responsible for developing variety (with full address) : This should give name of the Institute or organization where the variety has been developed along with the full address
6. Name of the person who helped in the development of the variety : Only those workers should be included who have contributed in the development of the variety/hybrid. The Co-workers can be grouped in 2 categories as the 'Developer' and as the 'Collaborator'.

   The co-worker should be associated with the project (from which cultivar has been developed) for a period of minimum of 2 years. The proposal should be signed by each of the co-worker and validated by the Head of the Organization.
7. Parentage (with details of pedigree including the source from which variety/inbred/A, B and R lines of the hybrid lines has been developed). This should essential ly include details of the base population/source of material used for developing variety/parental lines of the hybrid.

   Pedigree and parentage have to be furnished in details as to how the parents have been developed with flow charts, instead of just giving code numbers. Flow chart should depict clearly development of the proposal culture with year-wise details of attempting initial cross, followed by handling of segregating generation.

   Details, weather collection is indigenous (IC) or exotic (EC), accession no provided by the NBPGR if used, in the development of the variety or parental lines of hybrids, must be provided, Please note that this IC number should be different from the one provided by the NBPGR, upon submission of the seed sample of the line/hybrid/variety, the once variety/hybrid is recommended by the Variety Identification Committee (VIC).
8. Source of material in case of introduction : Details of the EC (Exotic collection) number, may be given provided by the NBPGR, for the imported material used in the variety development.
9. DNA profile of variety/hybrid/inbred/ A,B,R lines of the hybrid vis-à-vis check variety/line Detailed information on the molecular discrimination should be provided. Such information can be developed at crop-based institutes/NBPGR/Other labs. The information should include details of amplicons (name, sequence number, primer sequence) with reference to polymorphic markers.

   The relevant photographs should also be attached.
10. Breeding method used : The method used in developing the variety/parental line may be given
11. Breeding objective : The breeding objective for developing the variety
12. State varieties which most closely resemble the proposed variety in general characters.

    The information should include name of the varieties resembling most closely to the proposed variety with reference to different phenotypic traits.
13. Specific area of its adaptation (zones and states for which variety is proposed) and recommended productions ecology

    The information on zones (name of the states), season and production conditions, whether Rainfed or irrigated, should be mentioned.

14. Description of the hybrid/variety : The average and expected normal range with respect to various characters may be mentioned.
15. Description of parents of the hybrid : The average and expected normal range with respect to characters may be mentioned with reference to inbred/A line/B line/R line.
16. Yield data in coordinated trials (breeding, agronomy, pathology, entomology, quality etc) and regional/inter-regional district trials year-wise (level of fertilizer application, density of plant population and superiority over local control/standard variety) are to be indicated (to be attached) The yield data and other data of coordinated trials and other details as per the format of tables should be appended. Please not that mean is 'weighted mean' and not the 'arithmetic mean'.
17. Yield data from the national demonstration/large-scale demonstrations (to be attached) : The yield and other details as per the format of the tables should be appended.
18. Agency responsible for maintaining breeder seed : Name of the institute/organization/agency responsible to maintain the breeder seed of variety/parental line of hybrid should be given
19. Quantity of the breeder seed in stock (kg) : Quantity (kg) of available seeds with reference to variety, hybrid, inbred A/B/R lines of the hybrid are to be clearly indicated.
20. Information on acceptability of the variety by farmers/ consumers/ industry : Any information on such aspects can be given.
21. Specific recommendations, if any, for seed production (e.g. staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seed production, probable areas of seed production)

    The seed production technology and specific requirements should be mentioned clearly along with the proposal. With respect to seed production of hybrid, the staggered sowing of parental lines, if required, should be clearly indicated. The planting ration of male and female parents in the seed production plots should be indicated. In addition, if there are some other precautions to be taken they are to be mentioned clearly. The probable areas of seed production need to be given.
22. Vivid presentation (field view, close-up of a single plant and a seed/economic parts) : The proposal should invariably have colored pictures with a clear field view of the variety, a close-up of a single plant and a seeds/economic parts. Photograph of other plant parts which may help in identification of varieties can also be given. The cover page of the proposal should also have a colored photograph of the variety and should be designed well.
23. Package of practices along with attainable yield levels : A note on the package of practices of the crop with respect of the variety needs to be provided, highlighting particularly specific requirements of the variety to realize its attainable yield levels.
24. Any other pertinent information : Any relevant information, which is seemingly important with reference to variety, hybrid or parental lines of the hybrids, should also be given.
25. Others

    One-page 'executive summary' of the proposal may be provided in the beginning, highlighting specific features of the variety/hybrid. Excessive presentation in executive summary should be avoided.

    Each page of the proposal should be numbered.

    Checklist needs to be part of the proposal.

Appendix 8

Proforma for Submission of Proposal for Release of Crop Varieties/Hybrids to the Central Sub-Committee on Crop Standards, Notification and Release of Varieties

Content

S No Item

Summary of the Proposal (in bullets only)

Proforma for Submission of Proposal for Release of Crop Varieties/ Hybrids to the Central Sub-Committee on Crop Standards Notification and Release of Varieties

1	Name	
2	Name of the Crop and the species	
	a)Name of the variety under which tested in the AICRIP trials	
	B) Proposed name of the variety	
3	Sponsoring institute	
4	a)Institution or agency responsible for developing variety (with full Address)	
	b)Name of the person, who helped development of the variety	
	Developers	
	Collaborators	
5	A)Parentage (with details of pedigree, including the source from which variety/inbred/A,B and R lines of the hybrid has been developed)	
	b)Source of the material in case of introduction	
	c)DNA profile of variety/hybrid/inbred/A,B,R lines of the hybrid vis-a vis check variety/line	
	d)Breeding method used	
	E)Breeding objective	
6	State varieties which most closely resemble the proposed variety in general characters	
7	Recommended production ecology (rainfed/irrigated; high/low fertility; season)	
8	Specific area of its adaptation (zones and states for which variety has been proposed) and the recommended production ecology	
9	Description of hybrid/variety	
	a)Plant height	
	b)Distinguishing morphological characters	
	c)Maturity (range in number of days) (from seedling/transplanting to flowering, seed-to-seed)	
	d)Maturity group (early, medium & late, wherever such classification exists)	
	e)Reaction to major diseases under field and controlled condition s(reaction to physiological strains/races/pathotypes/bio-types is to be	

	indicated, wherever possible)			
	f)Reaction to major pests (under field and controlled conditions, including storage pests)			
	g)agronomic features (e.g.,resistance to lodging, shattering, fertilizer responsiveness, suitability to early/ late sown conditions, seed rate, etc.			
	h)Quality of produce a)Grain quality b)Fodder quality			
10	Description of the parents of the hybrid	A line/ inbred 1	B line/ inbred 2	R line
	a)Plant height (cm)			
	b) Distinguishing morphological characters			
	c)Days to flowering			
	d) Days to maturity (range in number of days-from seed-to-seed)			
	e) Is there any problem of synchronization? If yes, its method to overcome			
	f)Reaction to major diseases (under field and controlled conditions, reaction to physiological strains/races/bio-types/pathotypes needs to be indicated wherever possible)			
	g) Reaction to major pests (uder field and controlled conditions, including storage pests)			
	h)Agronomic features (e.g., resistance to lodging, shattering fertilizer responsiveness, suitability to early or late-sown conditions, seed rate, etc.)			
	i)Reaction to stresses			
11	a)Yield data in the coordinated trials (breeding, agronomy, pathology entomology, quality etc) and regional/inter regional district trials year-wise (level of fertilizer application, density of plant population and superiority over local control/standard variety) are to be indicated (to be attached)			
	b)Yield data from national demonstration/large-scale demonstrations(to be attached)			
12	a)Agency responsible for maintaining the breeder seed			
	b)Quantity of breeder seed in stock (kg) Variety/A line/B line/R line/Hybrid			
13	Specific recommendations, if any, for seed production (e.g., staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production)			
14	Vivid presentation (field view, close-up of a single plant and seeds/economic parts)			
15	a)Whether recommended by any workshop, seminar, conference, state seed committee etc.			
	b)If so, the recommendations with specific justifications for release of the proposed variety			
16	Specific area of its adaptation			
17	Acknowledgement of the submission of seed samples of variety/hybrid/inbred/ A, B and R lines of the hybrid from the NBPGR and IC numbers			
18	Package of practices along with attainable yield levels			
19	Information on the acceptability of the variety by farmers/consumers/industry			
20	Any other pertinent information			

Signature of all Contributors

Signature of the Head of the Institution

Checklist for Proforma for Submission of Proposal for Release of Crop Varieties/Hybrids to the Central Sub-Committee on Crop Standards Notification and Release of Varieties

Details/documents	**Attached**	
Parentage with details of pedigree, including the source from which variety/inbred/A,B and R lines of the hybrid has been developed	YES	NO
Source of the material in case of introduction (IC/EC numbers provided by the NBPGR)	YES	NO
Flow chart of details of development of variety/parental lines of hybrids	YES	NO
Molecular/DNA profile of variety/hybrid/A,B,R lines of the hybrid vis-à-vis check variety/line (details of unique amplicons that distinguish markers) with photographs	YES	NO
Detailed description of the hybrid/variety		
Detailed description of the parental lines of the hybrid	YES	NO
Yield data and other data on diseases, insect-pests, quality,etc. from the coordinated trials	YES	NO
Yield data from the national demonstration/large-scale demonstrations	YES	NO
Specific recommendations, if any, for seed production (eg., staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production etc.)	YES	NO
Vivid presentations (field view, close-up of a single plant and seeds) with the help of photographs)	YES	NO
Recommendations of the workshop, conference	YES	NO
Acknowledgement of the submission of seed sample of variety/hybrid/A,B and R lines of the hybrid submitted to the NBPGR	YES	NO
Package of practices	YES	NO
Proforma signed by all co-authors and head of organization	YES	NO
Any other pertinent information	YES	NO

Signature of the Head of the Institution

Table 1. Summarized yield data of the coordinated varietal trials

Name of the proposed variety/hybrid: Adaptability zone :
Production conditions :

Item	Year of testing	No. of trials/ locations	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
Mean yield (q/ha) a)Zonal b)Across zones (if applicable)	1st year									
	2nd year									
	3rd year									
Percentage increase or decrease over the checks and qualifying varieties	Weighted mean 2nd year 3rd year weighted mean									
Frequency in the top three groups (pooled for three years)										

Note: Qualifying variety is one which has completed three years of testing in the coordinated trials; Centre-wise data must be appended, otherwise proposal will not be considered

Table 2. Adaptability to agronomic variables

Name of the proposed variety/hybrid: Adaptability zone :
Production conditions :

Nature of experiments	Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
Sowing date experiments	Yield (q/ha) under recommended sowing date Percentage gain or loss when sown	(i)Early (ii)Normal (iii)Late							
Fertilizer experiments	Yield (q/ha) under recommended dose percentage gain or loss under other doses								
Irrigation experiments (wherever applicable)	Yield(q/ha) with adequate irrigation Percentage gain or loss with irrigation level	(i)Level1 (ii)Level2 (iii)Level3							

Note: specify each date of sowing, fertilizer level and number of irrigations at I, ii, iii

Table 3. Reaction to major diseases

Name of the proposed variety/hybrid: Adaptability zone :
Production conditions :

Disease Name		Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
Disease 1	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								
Disease 2	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								
Disease 3	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								
	Natural	1st year								
		2nd year								
		3rd year								
Disease 4	Artificial	1st year								
		2nd year								
		3rd year								

Table 4. Reaction to insect-pests

Name of the proposed variety/hybrid Adaptability zone :
Production conditions :

Pest		Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
Pest 1	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								
Pest 2	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								
Pest 3	Natural	1st year								
		2nd year								
		3rd year								
	Artificial	1st year								
		2nd year								
		3rd year								

Table 5.Data on the quality characteristics

Quality Characteristics	Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
Parameter-1									
Parameter-2									
Parameter-3									
Parameter-4									

Note: Specify the parameters under first column at 1-14

Table 6. Data on the other important characters

Name of the proposed variety/hybrid Adaptability zone :
Production conditions :

		Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
1.	Plant height	1st year								
		2nd year								
		3rd year								
2	Days of flowering	1st year								
		2nd year								
		3rd year								
3	Days to maturity	1st year								
		2nd year								
		3rd year								
4	1,000-grain weight	1st year								
		2nd year								
		3rd year								

		Item	Proposed variety	National check 1	Zonal check 2	Local check 3	Latest released check 4	Qual. Var.1	Qual. Var.2	Qual. Var.3
5	Lodging	1st year								
		2nd year								
		3rd year								
6	Others	1st year								
		2nd year								
		3rd year								

Guidelines for Filling-up Proforma for Submission of the Proposal for Release of Crop Varieties/Hybrids to the Central Sub-Committee on Crop Standards Notification and Release of Varieties

1. Name of the crop and the species : The name given to the variety may be indicative of crop name, institute name/code, and number, if any.
2. Name of the variety under which tested : This should include the name under which the variety was tested in the coordinated trials.
3. Proposed name of the variety : This should include the name of the variety that is proposed for its commercial use as per the existing guidelines.
4. Sponsoring institute : This should include the name of the institute/organization that sponsors the variety
5. Institution or agency responsible for developing variety (with full address) : Institute or organization where the variety has been developed along with the full address
6. Name of the person who helped in the development of the variety : Only those workers should be included who have contributed in the development of the variety/hybrid. The Co-workers can be grouped in 2 categories as the 'Developer' and as the 'Collaborator'.

   The co-worker should be associated with the project (from which cultivar has been developed) for a period of minimum of 2 years. The proposal should be signed by each of the co-worker and validated by the Head of the Organization.
7. Parentage (with details of pedigree including the source from which variety/inbred/A,B and R lines of the hybrid has been developed).

   This should essentially include the details of the base population/source of the material used for developing the variety/parental lines of the hybrid. Pedigree and parentage have to be furnished in details as to how the parents have been developed with flow charts, instead of just code numbers. Flow chart should clearly present the development of the proposed culture with year-wise details of attempting initial cross, followed by handling of segregating generation.

   Details, indigenous (IC) or exotic (EC) collections and the number of accessions (Provided by the NBPGR) if used, in the development of the variety or parental lines of hybrids, are to be provided, Please note that this IC number should be different from the one provided by the NBPGR at the submission of the seed sample of the line/hybrid/variety, the once variety/hybrid is recommended by the Variety Identification Committee (VIC).
8. Source of material in case of introduction : Details of the EC (Exotic collection) number, provided by the NBPGR, for the imported material used in the variety development, are to be given.
9. DNA profile of variety/hybrid/inbred/ A,B,R lines of the hybrid vis-à-vis check variety/line Detailed information on the molecular discrimination should be provided. Such information can be developed at crop-based institutes/NBPGR/Other labs. The information should include details of amplicons (name, sequence number, primer sequence) with reference to polymorphic markers.

   The relevant good quality high resolution photographs should also be attached.
10. Breeding method used : The method used in developing the variety/parental line

11. Breeding objective : The breeding objective for developing the variety
12. State varieties which most closely resemble the proposed variety in general characters.

    The information should include name of the varieties resembling most closely to the proposed variety with reference to different phenotypic traits.
13. Recommended production ecology : The information on zones (name of the states), season and production conditions, whether Rainfed or irrigated, should be mentioned.
14. Description of the hybrid/variety : The average and expected normal range with respect to various characters may be mentioned.
15. Description of parents of the hybrid : The average and expected normal range with respect to characters may be mentioned with reference to inbred/A line/B line/R line.
16. Yield data in coordinated trials (breeding, agronomy, pathology, entomology, quality etc) and regional/inter-regional district trials year-wise (level of fertilizer application, density of plant population and superiority over local control/standard variety) are to be indicated (to be attached) The yield data and other data of coordinated trials and other details as per the format of tables should be appended. Please not that mean is 'weighted mean' and not the 'arithmetic mean'.
17. Yield data from the national demonstration/large-scale demonstrations (to be attached) : The yield and other details as per the format of the tables should be appended.
18. Agency responsible for maintaining breeder seed : Name of the institute/organization/agency responsible for maintenance of the breeder seed of variety/parental line of hybrid
19. Quantity of the breeder seed in stock (kg) : Quantity (kg) of available seeds with reference to variety, hybrid, inbred/AB/R lines of the hybrid are to be indicated clearly.
20. Information on acceptability of the variety by farmers/ consumers/ industry : Any information on such aspects can be given.
21. Specific recommendations, if any, for seed production (e.g. staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production)

    The seed production technology and specific requirements should be mentioned clearly along with the proposal. With respect to seed production of hybrid, the staggered sowing of parental lines, if required, should also be clearly indicated. The planting ration of male and female parents in the seed production plots should be indicated. In addition, if there are some other precautions needed, they are to be mentioned clearly. The probable areas of seed production need to be give.
22. Vivid presentation (field view, close-up of a single plant and a seed/economic parts) : The proposal should invariably have coloured pictures with a clear field view of the variety, a close-up of a single plant and seeds/economic parts. Photograph of other plant parts which may help in identification of varieties can also be given. The cover page of the proposal should also have a colored photograph of the variety and should be well-designed.
23. whether recommended by any workshop, seminar, conference, state seed committee etc. : Details of workshop/ conference/ seminar/ or state variety release committee be given, which recommended the variety for release.
24. If so, its recommendations with specific justifications for release of the proposed variety : The specific recommendations of the workshop/conference/state variety release committee along with the documents should be attached.
25. Specific area of its adaptation : The zone and states for which variety is proposed.
26. Acknowledgement of the submission of the seed sample of variety/hybrid/inbred/ A,B and R lines of the hybrid from the NBPGR and IC numbers : The acknowledgement certificate issued by the NBPGR providing details of the IC number with respect to variety, hybrid and parental lines of hybrids should be part of the proposal

27. Package of practices along with the attainable yield levels : A note on the package of practices of crop with respect to the variety needs to be provided, highlighting particularly specific requirements of the variety to realize its attainable yield levels.

28. Others

    One-page 'executive summary' of the proposal may be provided in the beginning, highlighting specific features of the variety/hybrid. Exaggerated presentation in executive summary needs to be avoided.

    Each page of the proposal should be numbered.

    Checklist needs to be part of the proposal.

    The CVRC proposal should be scrutinized at the level of the Project Coordinator/Project Director before submission to the CVRC. PCs/PDs will give their opinion on the proposal to member-secretary (CVRC).

29. Any other pertinent information : Any other relevant information which is important in reference to the variety, hybrid or parental lines of the hybrids is also required.

Appendix 9

Monitoring of AICRIP Trials with list of observations to be recorded by the cooperators during kharif 2019

Trial name	:	
Date of sowing	:	
Date of planting	:	
Plot size (Gross) m^2	:	
Plot size (Net)m^2	:	
Spacing cm	:	
No of entries	:	
Name of the checks (including local check)	:	
Cultures flowered earlier than the check	:	
Cultures flowered later than checks	:	
Highly promising entries	:	
Poor performing entries	:	
Shift based on duration	:	
Rejection based on (a) mixtures or off types (b) non-uniformity/or segregation and high degree of susceptibility to biotic/abiotic stress.	:	
Any other comments	:	

Note:	Please use additional copies for taking observations in each of the AICRIP trials allotted to the centre & return the same positively to the PI in December month.

Date:

Signature of the Breeder (with seal)

Appendix 10

CENTRE WISE BREEDER SEED PRODUCTION DURING KHARIF, 2018 (AS PER DAC INDENT)

Quintals

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		ANDHRA PRADESH			
1	ANGRAU, Guntur	Amara (MTU-1064)	7.60	7.60	0.00
		Bharani (NLR 30491)	7.00	0.00	-7.00
		Bhavapuri Sannalu	0.30	0.00	-0.30
		BPT-3291 (Sonamasuri)	8.60	8.60	0.00
		Chandra (MTU-1153)	3.30	3.30	0.00
		Cottondora Sannalu(MTU-1010)	330.00	169.72	-160.28
		Indra(MTU - 1061)	7.00	7.00	0.00
		Maruteru sannalu (MTU-1006), IET14348)	1.30	1.30	0.00
		MTU 1075 (IET 18482)	18.00	18.00	0.00
		MTU-1031 (Tholakuri)	0.30	0.30	0.00
		MTU-1032 (Godavari)	0.30	0.30	0.00
		MTU--1038	3.00	0.00	-3.00
		MTU-1081	0.10	0.00	-0.10
		MTU-1156	0.30	0.30	0.00
		MTU-1210	1.00	0.00	-1.00
		MTU-7029	237.20	105.00	-132.20
		Nellore Mahsuri (NLR-34449)	34.50	0.00	-34.50
		NLR-145	7.00	0.00	-7.00
		Pardhiva (NLR - 33892)	3.00	3.00	0.00
		Samba Mahsuri (BPT-5204)	91.60	91.60	0.00
		Sri Dhruthi (MTU-1121)	2.30	2.30	0.00
		Srikakulam Sannalu (RGL-2537)	10.00	10.00	0.00
		Vijetha (MTU-1001)	124.00	124.00	0.00
		Total	**897.70**	**552.32**	**-345.38**
		ASSAM			
2	AAU, Titabar	Chandrama (IET 9354, 10419)	38.00	45.80	7.80
		Naveen	15.00	62.20	47.20
		Total	**53.00**	**108.00**	**55.00**
3	AAU, Jorhat	Bahadur	0.20	0.25	0.05
		Ranjit	20.70	22.80	2.10
		Total	**20.90**	**23.05**	**2.15**
		BIHAR			
4	RAU, PUSA	Rajendra Bagavathi	81.00	90.50	9.50
		Rajendra Kasturi	1.50	2.20	0.70
		Rajendra Mahsuri-1	64.00	63.88	-0.12
		Rajendra Suwasini	1.50	2.00	0.50
		Rajendra Sweta	32.60	32.60	0.00
		Rajshree(TCA-80-4) (IET-7970)	0.40	0.40	0.00
		Total	**181.00**	**191.58**	**10.58**
5	ICAR-Patna	Swarna Shreya	10.00	12.50	2.50
		Total	**10.00**	**12.50**	**2.50**
		CHHATTISGARH			
6	IGAU, Raipur	Badshabhog Selection-1	4.50	6.00	1.50
		Bamaleshwari(IET 14444,)	20.00	22.50	2.50

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		CGZR-1	1.00	3.30	2.30
		Chandrahasini (IET -16800)	30.00	30.84	0.84
		Danteshwari (IET 15450)	10.00	11.40	1.40
		Dubraj Selection-1	4.00	6.00	2.00
		IGKVR-1 (IET-19569)	90.00	120.00	30.00
		IGKVR-2 (IET 19795)	52.00	54.90	2.90
		IGRKVR-1244 (IET 19796)	58.00	60.60	2.60
		Indira Aerobic- 1	16.00	16.20	0.20
		Indira Bharani dhan-1 (IET 21205)	35.00	45.00	10.00
		IR-36	16.00	27.00	11.00
		IR-64	58.50	64.50	6.00
		Jaldbi (IET - 17153)	1.00	1.10	0.10
		Karma Mahsuri (IET 19991)	20.00	29.10	9.10
		Mahamaya (IET-10749)	26.60	27.00	0.40
		Poornima (IET-12284)	5.50	6.90	1.40
		Tarunbhog Selection-1	4.00	4.50	0.50
		Vishnubhog Selection-1	1.50	2.30	0.80
		Total	**453.60**	**539.14**	**85.44**
GUJARAT					
7	GAU, Nawagam	GAR 13	0.10	**0.15**	0.05
		Total	**0.10**	**0.15**	**0.05**
HARYANA					
8	CSSRI, Karnal	CSR-30	6.00	8.00	2.00
		CSR-36 (Naina) (IET17340)	5.50	7.60	2.10
		CSR-43 (IET-18259)	17.50	19.60	2.10
		Total	**29.00**	**35.20**	**6.20**
9	RRS, Kaul	HKR-127 (HKR-95-222)	2.60	10.40	7.80
		HKR-47	4.10	10.40	6.30
		HKR-48	1.10	3.20	2.10
		Total	**7.80**	**24.00**	**16.20**
HIMACHAL PRADESH					
10	CSKHPKVV, Malan	HPR 2143	8.00	1.50	-6.50
		HPR-1068	5.00	8.00	3.00
		HPR-1156 (IET-16007)	9.90	1.20	-8.70
		HPR-2612 (Palam Basmati-1)	2.00	10.00	8.00
		HPR-2720	2.00	0.50	-1.50
		HPR-2880	3.00	1.80	-1.20
		Total	**29.90**	**23.00**	**-6.90**
JHARKHAND					
11	CRURRS, Hazaribagh	Abhishek (IET-17868) (RR-272-829)	47.00	30.00	-17.00
		Anjali (IET 16430, RR-347-166)	2.70	2.70	0.00
		CR Dhan 40	2.50	2.50	0.00
		Hazaridhan	2.50	2.50	0.00
		Sahbhagi Dhan (IET 19576)	383.70	231.00	-152.70
		Vandana (RR-167-982)	2.04	2.10	0.06
		Total	**440.44**	**270.80**	**-169.64**
12	BAU, Ranchi	Birsa Vikas Dhan108	1.70	0.00	-1.70
		Birsa Vikas Dhan-109	5.70	1.20	-4.50
		Birsa Vikas Dhan-110	1.70	1.10	-0.60
		Birsamati	1.70	2.30	0.60
		Total	**10.80**	**4.60**	**-6.20**

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
JAMMU & KASHMIR					
13	SKUAT, Khudwani	Chenab (SKAU-23)	1.00	**0.00**	-1.00
		Total	**1.00**	0.00	**-1.00**
14	SKUAST, Chatha	SJR 5	10.00	12.00	2.00
		Giza 14	0.30	0.00	-0.30
		Total	**10.30**	**12.00**	**1.70**
KARNATAKA					
15	UAS, Bangalore	BR-2665	5.00	**6.00**	1.00
		Thanu	3.30	4.00	0.30
		Tunga (IET-13901)	5.10	0.00	-5.10
		Total	**13.40**	**10.00**	**-3.80**
16	ARS, Mugad	INTAN	2.00	3.00	1.00
		Abilash	1.25	4.00	2.75
		Total	**3.25**	7.00	**3.75**
KERALA					
17	RRS, Monocompu	Bhadra (MO-4)	3.80	2.00	-1.80
		Uma	6.80	8.00	1.20
		Total	**10.60**	10.00	**-0.60**
18	KAU, Pattambi	Athira (PBT-51)	0.60	2.50	1.90
		Jyothi	12.50	35.00	22.50
		PTB-45 (Matta Triveni)	2.00	5.00	3.00
		Varsha (PTB-56)	0.30	0.10	-0.20
		Total	**15.40**	**42.60**	**27.20**
MADHYA PRADESH					
19	JNKVV, Jabalpur	JR 767	10.00	124.97	114.97
		JR-503 (Richa) (IET-16783)	0.50	0.00	-0.50
		Kranti(R-2022)	19.10	2872.20	2853.10
		Rashmi(JR-201)	10.00	19.40	9.40
		Total	**39.60**	**3016.57**	**2976.97**
MAHARASTRA					
20	RARS, Karjat	Karjat-184	1.00	3.59	2.59
		Karjat-2	1.32	4.80	3.48
		Karjat-3	5.00	5.44	0.44
		Karjat-5	2.80	4.48	1.68
		Karjat-6	1.88	5.12	3.24
		Karjat-7	3.00	7.36	4.36
		Karjat-8	1.00	7.36	6.36
		Total	**16.00**	**38.15**	**22.15**
21	ARS, Radhanagari	Bhogavathi	4.70	10.80	6.10
		Total	**4.70**	**10.80**	**6.10**
22	ARS, Ratanagiri	Ratnagiri-1	0.60	60.70	60.10
		Ratnagiri -2	1.00	1.50	0.50
		Ratnagiri -24 (RTN-24) (IET-19812)	3.00	11.50	8.50
		RTN-5	2.00	17.50	15.50
		Total	**6.60**	**91.20**	**84.60**
23	Vadagaon	Indrayani (IET - 12897)	16.00	38.00	22.00
		Phule Samrudhi	6.00	21.50	15.50
		Total	**22.00**	**59.50**	**37.50**
24	ARS, Sindewahi	PKV HMT	79.60	**116.89**	37.29
		HMT sona	1.50	0.00	-1.50
		Total	**81.10**	**116.89**	**35.79**

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		NEW DELHI			
25	BEDF, New Delhi	Pusa Basmati- 1121	15.00	15.00	0.00
		Pusa Basmati-1 (IET-10364)	10.00	10.50	0.50
		Pusa Basmati-1509 (IET 21960)	20.00	22.00	2.00
		Total	**45.00**	**47.50**	**2.50**
26	DSST & IARI, New Delhi	PUSA 1592 (IET 22289)	1.20	8.00	6.80
		Pusa Sugandh-5(IET-17021)	40.00	80.00	40.00
		PUSA-6 (IET 22290) (PUSA 1612-07-6-5)	1.90	8.00	6.10
		Total	**43.10**	96.00	**52.90**
27	ICAR-IARI, Regional Station, Karnal	Improved Pusa Basmati-1 (IET 18990)	2.10	2.50	0.40
		Pusa Basmati- 1121	54.00	54.00	0.00
		Pusa Basmati -1637	20.00	20.00	0.00
		Pusa Basmati -1728	10.00	10.00	0.00
		Pusa Basmati-1 (IET-10364)	13.00	14.00	1.00
		Pusa Basmati-1509 (IET 21960)	26.00	26.00	0.00
		Pusa basmati-6 (IET 18005)	20.00	20.00	0.00
		PUSA-44	35.00	35.00	0.00
		Pusa Sungandh 2	0.40	0.00	-0.40
		Pusa Sugandh 3	0.50	0.00	-0.50
		Total	**181.00**	**181.50**	**0.50**
		ODISHA			
28	NRRI, Cuttack*	Ankit (CR Dhan101) CR2702	1.50	0.00	-1.50
		Annada	10.50	12.00	1.50
		Bhuvan(IET-7804)	0.60	0.00	-0.60
		Binadhan-12	70.00	0.00	-70.00
		Ciherung Sub-1	15.00	8.00	-7.00
		CR 1009-Sub-1	6.10	6.50	0.40
		CR Dhan 10 (IET 18312)	6.00	0.00	-6.00
		CR Dhan 201(IET-21924)	1.00	20.00	19.00
		CR Dhan 203(Sachala)	9.60	12.00	2.40
		CR Dhan 209	1.00	1.00	0.00
		CR Dhan 300(CR2301-5)	3.80	0.00	-3.80
		CR Dhan 303(CR2649-7)	10.30	10.00	-0.30
		CR Dhan 304(IET 22117)	6.00	7.00	1.00
		CR Dhan 305 (IET 21287)	1.30	1.00	-0.30
		CR Dhan 307	5.00	15.00	10.00
		CR Dhan 310	7.50	5.30	-2.20
		CR Dhan 401(Reeta) (IET 19969)	1.30	0.00	-1.30
		CR Dhan 405	2.00	3.00	1.00
		CR Dhan 500(IET 20220)	60.00	36.00	-24.00
		CR Dhan 505(IET 21719)	3.00	0.00	-3.00
		CR Dhan 601 (IET 18558)	60.00	0.00	-60.00
		CR Dhan 800	5.00	2.10	-2.90
		CR Dhan 910	0.30	0.10	-0.20
		CR DHAN-501 (IET 19189)	5.00	3.60	-1.40
		CR sugandh Dhan-3 (IET 18395)	1.00	1.50	0.50
		CR-1014	0.30	1.20	0.90
		Dharitri (IET 6272)	4.20	7.00	2.80
		Gayatri (IET 8002)	2.00	16.80	14.80
		Geetanjali (CRM-2007-1) (IET-17276)	1.00	1.00	0.00

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		IR64 Drt 1(IET 22836)(DRR-42)	45.00	0.00	-45.00
		Khitish (IET-4094)	5.60	8.00	2.40
		Lunasampad (IET 19470)	1.60	1.80	0.20
		Lunasuwarna (IET 18697)	1.60	1.80	0.20
		Lunusree	0.60	0.00	-0.60
		Naveen (IET-14461)	35.00	25.00	-10.00
		Phalguni (IET 18720) CRAC 2224-1041)	0.50	1.00	0.50
		Pooja(IET-12241)	44.10	76.20	32.10
		Poorna Bhog	0.30	0.10	-0.20
		SAMALEI (IET-3350)	0.10	0.00	-0.10
		Sambha Sub - 1 (IET 21248)	23.50	7.80	-15.70
		Sarala CR-260-77 (IET-10279)	5.60	21.00	15.40
		Satyabama	12.00	3.00	-9.00
		Sasvitri (IET - 5897)(CR 1009)	4.60	11.40	6.80
		Shatabdi (IET-4786)	36.00	30.00	-6.00
		Swarna Sub-1 (CR 2539-1) IET-20266	314.70	125.10	-189.60
		Varshadhan (CRLC-899) (IET-15296)	15.30	16.20	0.90
		Total	**846.40**	**498.50**	**-347.90**
29	OUAT, Bhubaneshwar	Improved Lalat	15.70	0.00	-15.70
		Jajati (IET - 7284)	0.50	0.00	-0.50
		Khandagiri	9.70	9.70	0.00
		Lalat (IET-9947)	46.00	13.00	-33.00
		Manaswini (IET 19005)	5.00	6.00	1.00
		Mandakini (OR 2077-4) (IET 17847)	10.30	10.00	-0.30
		Mrunalini (OR 1898-18) IET 18649	5.00	18.00	13.00
		Pankaj	0.90	0.00	-0.90
		Parijat (IET-2684)	6.10	4.40	-1.70
		Pratikshya (ORS 201-5) (IET-15191)	60.70	89.00	28.30
		Rani Dhan (IET-19148)	13.20	20.00	6.80
		Surendra (IET-12815)	1.40	2.00	0.60
		Udayagiri(IET-12316)	0.30	2.60	2.30
		Total	**174.80**	**174.70**	**-0.10**
30	SSTL, BBSR, Govt of Odisha	Kalachampa	10.00	10.00	0.00
		Total	10.00	10.00	0.00
PUNJAB					
31	PAU, Ludhina	PAU-201	2.40	6.00	3.60
		PR 121	28.00	30.00	2.00
		PR-111	8.04	9.00	0.96
		PR-113	9.10	11.00	1.90
		PR-114	19.10	28.00	8.90
		PR-116	2.20	4.30	2.10
		PR-118	13.60	25.00	11.40
		PR-122	17.40	20.00	2.60
		PR-123	4.70	6.00	1.30
		PR-124	10.70	12.00	1.30
		PR-126	34.10	40.00	5.90
		Punjab Basmati - 2	0.10	1.00	0.90
		Punjab Basmati - 3	1.10	4.00	2.90

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		Punjab Basmati - 4	0.25	1.00	0.75
		Punjab Basmati - 5	5.70	5.70	0.00
		Total	**156.49**	**203.00**	**46.51**
RAJASTHAN					
32	MPUAT, Kota	Pratap-1 (RSK-1091-10-1-1)	0.10	0.10	0.00
		Total	**0.10**	**0.10**	**0.00**
TAMIL NADU					
33	TNAU, Coimbatore	ADT ® -45 (IET-15924)	0.10	0.10	0.00
		ADT-37	12.00	12.00	0.00
		ADT-39	6.00	6.00	0.00
		CO-43 Sub-1 (lET- 25676)	4.00	3.00	-1.00
		CO-51	11.80	11.75	-0.05
		Total	**33.90**	**32.85**	**-1.05**
TELANGANA					
34	ICAR-IIRR, Hyderabad.	Binadhan-10	0.30	0.10	-0.20
		Binadhan-12	20.00	1.40	-18.60
		Binadhan-8	0.40	0.60	0.20
		Ciherung Sub-1 (Binadhan-11)	13.50	0.18	-13.32
		DRR Dhan 48 (IET 24555)	4.00	0.00	-4.00
		DRR Dhan 49 (IET 24557)	2.50	0.00	-2.50
		DRR Dhan 50 (IET 25671)	9.00	0.00	-9.00
		DRR Dhan 51 (IET 25484)	4.00	0.00	-4.00
		DRR Dhan 45	4.30	0.00	-4.30
		DRR Dhan 47 (IET 23356)	4.00	3.50	-0.50
		DRR Dhan 39	6.30	7.00	0.70
		DRR Dhan 43	1.50	2.80	1.30
		DRR Dhan 46	6.00	7.00	1.00
		Improved Samba Mahsuri (RP Bio-226)	27.00	30.00	3.00
		IR64 Drt 1(IET 22836)(DRR-42)	50.00	64.50	14.50
		Jaya	17.20	4.20	-13.00
		Krishna Hamsa	0.05	0.30	0.25
		Masuri	2.00	2.80	0.80
		Rasi (IET- 1444)	0.30	0.50	0.20
		Sampada (IET 19424)	43.00	47.80	4.80
		Sukha Dhan-6	0.10	0.00	-0.10
		Total	**215.45**	172.68	**-42.77**
35	PJTSAU, Rajendra Nagar	ErraMallelu (WGL-20471)	6.10	6.50	0.40
		JGL-1798	4.70	4.70	0.00
		JGL-18047 (Bathukamma)	6.50	6.50	0.00
		Kavya(WGL-48684)	0.50	0.60	0.10
		KNM-118	16.20	16.20	0.00
		RNR-15048	10.30	11.00	0.70
		Tellahamsa	2.70	2.70	0.00
		Warangal Samb a (WGL-14)	0.30	4.00	3.70
		Warangal Sannalu (WGL-32100) (IET 18044)	10.00	10.00	0.00
		Total	**57.30**	**62.20**	**4.90**
UTTARAKHAND					
36	GBPUAT, Pantnagar	Govind	0.40	11.09	10.69
		Pant Dhan 18 (IET 17920) (UPRI 99-1)	1.00	13.80	12.80
		Pantdhan-10 (IET - 8616)	0.30	12.42	12.12

S.No	Name of the centre	Name of variety	Allocation as per BSP-I	Actual Prod	Surplus(+) Deficit (-)
		Pantdhan -11 (IET - 9620)	0.30	25.70	25.40
		Pantdhan -12 (IET-10955)	1.10	7.92	6.82
		Pant Dhan-19(IET 17544)	0.30	24.30	24.00
		Pantdhan -24	10.00	44.12	34.12
		Total	**13.40**	**139.35**	**125.95**
37	VIHA, Almora	VL Dhan 157 (VL 31611) (IET 22292)	0.40	0.20	-0.20
		VL Dhan 65	0.30	1.00	0.70
		VL Dhan 68 (VL 31611) (IET 22283)	7.30	6.50	-0.80
		VL Dhan-86 (VL 97-3861) (IET-16863)	0.30	0.50	0.20
		VL.Dhan 85 (IET-16455) (VL-3613)	0.30	0.90	0.60
		Total	**8.60**	**9.10**	**0.50**
UTTAR PRADESH					
38	NDUAT, Faizabad	Narendra Dhan 97	1.10	5.40	4.30
		Narendra Usar Dhan-2008 (NDRK-5088) IET-18699)	1.10	0.00	-1.10
		Narendra-8002 (IET-15848)	1.10	34.00	32.90
		NDR 2064 (IET 17475)	1.10	58.50	57.40
		NDR 2065 (IET 17476)	1.10	54.65	53.55
		NDR-359	1.10	16.00	14.90
		Sarjoo-52	5.90	16.00	10.10
		Shusk Samrat (NDR 1045-2) (IET-17458)	0.30	6.80	6.50
		Total	**12.80**	**191.35**	**178.55**
39	BHU, Varanasi	HUR-917	16.00	32.40	16.40
		Total	**16.00**	**32.40**	**16.40**
40	SVBAUA& T Meerut	Vallabh Basmati - 24 (IET 20827) (MAUB - 171)	2.00	2.25	0.25
		Total	**2.00**	**2.25**	**0.25**
WEST BENGAL					
41	RRS, Chnisurah	Ajit	3.50	8.00	4.50
		BNKR-1(Dhiren) (IET 20760)	4.00	3.90	-0.10
		Chinsurah Rice (IET-19140)	1.00	1.50	0.50
		CN1272-55-105(IET 19886)	0.50	1.00	0.50
		Khitish (IET-4094)	3.00	5.00	2.00
		Pushpa (IET 17509)	1.60	1.00	-0.60
		Sabita (IET-8970)	4.90	6.00	1.10
		Sampriti (BNKR-B12) (IET-21987)	2.40	2.40	0.00
		Shatabdi (IET-4786)	20.00	20.00	0.00
		Sujala (CNR-2) (IET 20235)	10.10	5.00	-5.10
		Total	**51.00**	**53.80**	**2.80**
42	BCKVV, Nadia	Gontra Bidhan-1 (IET 17430)	77.00	77.00	0.00
		Gontra Bindhan-3 (IET 22752)	20.70	21.00	0.30
		Total	**97.70**	**98.00**	**0.30**
Sub Total			**4323.20**	**7204.33**	**2881.13**

HYBRIDS

S. No.	Name of the entre	Name of hybrid	Allocation as per BSP-I	Actual Prod.	Surplus (+) Deficit (-)
1.	UAS, Bangalore	**KRH-4**			
		A-Line	0.23	1.00	0.77
		B-Line	0.06	0.50	0.44
		R-Line	0.06	0.20	0.14
		Total	**0.35**	**1.70**	**1.35**
2.	RARS, Karjat	**SAHYADRI-3**			
		A Line	0.10	0.41	0.31
		B Line	0.03	0.17	0.14
		R Line	0.03	0.10	0.07
		SAHYADRI-4			
		A Line	0.15	0.40	0.25
		B Line	0.05	0.15	0.10
		R Line	0.03	0.05	0.02
		SAHYADRI-5			
		A Line	0.15	0.18	0.03
		B Line	0.05	0.27	0.22
		R Line	0.05	0.41	0.36
		Total	**0.64**	**2.14**	**1.5**
3.	NRRI, Cuttack	CRMS 31-A	0.18	0.00	-0.18
		CRMS 31-B	0.09	0.00	-0.09
		CRMS 32-A	0.18	0.00	-0.18
		CRMS 32-B	0.09	0.00	-0.09
		Total	**0.54**	**0.00**	**-0.54**
		Total (Hybrids)	**1.53**	**3.84**	**2.31**
		Grand Total	**4324.73**	**7208.17**	**2883.44**

***Appendix*-11**

VARIETY WISE BREEDER SEED PRODUCTION DURING KHARIF, 2018 (AS PER DAC INDENT)

Quintals

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
1	Abhishek (IET-17868)	2007	47.00	30.00	-17.00	CRURRS, Hazaribagh
2	ADT ® -45 (IET-15924)	2001	0.10	0.10	0.00	TNAU,Coimbatore
3	ADT-37	1989	12.00	12.00	0.00	TNAU,Coimbatore
4	ADT-39	1989	6.00	6.00	0.00	TNAU,Coimbatore
5	Ajit	2014	3.50	8.00	4.50	RRS, Chnisurah
6	Amara (MTU-1064)	2010	7.60	7.60	0.00	ANGRAU, Guntur
7	ANJALI (IET 16430)	2002	2.70	2.70	0.00	CRURRS, Hazaribagh
8	Ankit (CR Dhan101)	2015	1.50	0.00	-1.50	NRRI, Cuttack
9	Annada	1988	10.50	12.00	1.50	NRRI, Cuttack
10	Athira (PBT-51)	2006	0.60	2.50	1.90	KAU, Pattambi
11	Badshabhog Selection1	2016	4.50	6.00	1.50	IGAU, Raipur
12	Bahadur	1994	0.20	0.25	0.05	AAU,Jorhat
13	BAMLESHWARI (IET 14444)	2001	20.00	22.50	2.50	IGAU, Raipur
14	Bhadra (MO-4)	1980	3.80	2.00	-1.80	RRS, Monocompu
15	Bharani (NLR 30491)	2001	7.00	0.00	-7.00	ANGRAU, Guntur
16	Bhavapuri Sannalu	2011	0.30	0.00	-0.30	ANGRAU, Guntur
17	Bhogavati	2007	4.70	10.80	6.10	ARS, Radhanagari
18	Bhuvan(IET-7804)	1989	0.60	0.00	-0.60	NRRI, Cuttack
19	Binadhan-10	2015	0.30	0.10	-0.20	ICAR-IIRR, Hyderabad
20	Binadhan-12	2015	90.00	1.40	-88.60	NRRI, Cuttack, ICAR-IIRR, Hyderabad
21	Binadhan-8	2015	0.40	0.60	0.20	ICAR-IIRR, Hyderabad
22	Birsa Vikas Dhan108		1.70	0.00	-1.70	BAU, Ranchi
23	Birsa Vikas Dhan-109	2005	5.70	1.20	-4.50	BAU, Ranchi
24	Birsa Vikas Dhan-110	2005	1.70	1.10	-0.60	BAU, Ranchi
25	Birsamati	2005	1.70	2.30	0.60	BAU, Ranchi
26	BNKR-1(Dhiren) (IET 20760)	2015	4.00	3.90	-0.10	RRS, Chnisurah
27	BPT-3291(Sonamasuri)	2005	8.60	8.60	0.00	ANGRAU, Guntur
28	BR-2665	2006	5.00	6.00	1.00	UAS, Bangalore
29	CGZR-1	2017	1.00	3.30	2.30	IGAU, Raipur
30	Chandra (MTU-1153)	2016	3.30	3.30	0.00	ANGRAU, Guntur
31	Chandrahasini (IET -16800)	2007	30.00	30.84	0.84	IGAU, Raipur
32	CHANDRAMA (IET 9354, 10419)	2011	38.00	45.80	7.80	AAU, Titabar
33	CHENAB (SKAU-23)	1996	1.00	0.00	-1.00	SKUAT, Khudwani
34	Chinsurah Rice (IET-19140)	2011	1.00	1.50	0.50	RRS, Chnisurah
35	Ciherung Sub-1 (Binadhan-11)	2014	28.50	8.18	-20.32	IIRR, Hyderabad &NRRI, Cuttack
36	CN1272-55-105 (IET 19886)		0.50	1.00	0.50	RRS, Chnisurah
37	CO-43 Sub-1 (lET- 25676)		4.00	3.00	-1.00	TNAU,Coimbatore

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
38	CO-51	2017	11.80	11.75	-0.05	TNAU,Coimbatore
39	Cottondora Sannalu (MTU-1010)	2000	330.00	169.72	-160.28	ANGRAU, Guntur
40	CR 1009-Sub-1	2013	6.10	6.50	0.40	NRRI, Cuttack
41	CR Dhan 10 (IET 18312)	2008	6.00	0.00	-6.00	NRRI, Cuttack
42	CR Dhan 201(AEROBIC)	2014	1.00	20.00	19.00	NRRI, Cuttack
43	CR Dhan 203(Sachala)	2015	9.60	12.00	2.40	NRRI, Cuttack
44	CR Dhan 209		1.00	1.00	0.00	NRRI, Cuttack
45	CR Dhan 300(CR2301-5)	2014	3.80	0.00	-3.80	NRRI, Cuttack
46	CR Dhan 303(CR2649-7)	2014	10.30	10.00	-0.30	NRRI, Cuttack
47	CR Dhan 304(IET 22117)	2014	6.00	7.00	1.00	NRRI, Cuttack
48	CR Dhan 305 (IET 21287)	2014	1.30	1.00	-0.30	NRRI, Cuttack
49	CR Dhan 307	2015	5.00	15.00	10.00	NRRI, Cuttack
50	CR Dhan 310	2016	7.50	5.30	-2.20	NRRI, Cuttack
51	CR Dhan 40	2008	2.50	2.50	0.00	CRURRS, Hazaribagh
52	CR Dhan 401(Reeta) (IET 19969)	2011	1.30	0.00	-1.30	NRRI, Cuttack
53	CR Dhan 405		2.00	3.00	1.00	NRRI, Cuttack
54	CR Dhan 500(IET 20220)	2012	60.00	36.00	-24.00	NRRI, Cuttack
55	CR Dhan 505(IET 21719)	2014	3.00	0.00	-3.00	NRRI, Cuttack
56	CR Dhan 601 (IET 18558)	2011	60.00	0.00	-60.00	NRRI, Cuttack
57	CR Dhan 800		5.00	2.10	-2.90	NRRI, Cuttack
58	CR Dhan 910		0.30	0.10	-0.20	NRRI, Cuttack
59	CR Dhan-501 (IET 19189)	2011	5.00	3.60	-1.40	NRRI, Cuttack
60	CR sugandh Dhan-3 (IET 18395)	2008	1.00	1.50	0.50	NRRI, Cuttack
61	CR-1014	1989	0.30	1.20	0.90	NRRI, Cuttack
62	CSR-30	2001	6.00	8.00	2.00	CSSRI, Karnal
63	CSR-36 (Naina) (IET17340)	2005	5.50	7.60	2.10	CSSRI, Karnal
64	CSR-43 (IET-18259)	2014	17.50	19.60	2.10	CSSRI, Karnal
65	Danteshwari (IET 15450)	2001	10.00	11.40	1.40	IGAU, Raipur
66	Dharitri (IET 6272)	1989	4.20	7.00	2.80	NRRI, Cuttack
67	DRR Dhan 39	2015	6.30	7.00	0.70	ICAR-IIRR, Hyderabad
68	DRR Dhan 43	2015	1.50	2.80	1.30	ICAR-IIRR, Hyderabad
69	DRR Dhan 45	2016	4.30	0.00	-4.30	ICAR-IIRR, Hyderabad
70	DRR Dhan 46	2016	6.00	7.00	1.00	ICAR-IIRR, Hyderabad
71	DRR Dhan 47 (IET 23356)		4.00	3.50	-0.50	ICAR-IIRR, Hyderabad
72	DRR Dhan 48 (IET 24555)		4.00	0.00	-4.00	ICAR-IIRR, Hyderabad
73	DRR Dhan 49 (IET 24557)		2.50	0.00	-2.50	ICAR-IIRR, Hyderabad
74	DRR Dhan 50 (IET 25671)		9.00	0.00	-9.00	ICAR-IIRR, Hyderabad
75	DRR Dhan 51 (IET		4.00	0.00	-4.00	ICAR-IIRR, Hyderabad

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
	25484)					
76	Dubraj Selection-1	2016	4.00	6.00	2.00	IGAU, Raipur
77	ErraMallelu (WGL-20471)	1993	6.10	6.50	0.40	PJTSAU,Rajendranagar
78	GAR-13	1989	0.10	0.15	0.05	NRRI, Cuttack
79	Gayatri (IET 8002)	2006	2.00	16.80	14.80	NRRI, Cuttack
80	Geetanjali (CRM-2007-1) (IET-17276)	1978	1.00	1.00	0.00	Chatha
81	GIZA-14	2008	0.30	0.00	-0.30	BCKVV, Nadia
82	Gontra Bidhan-1 (IET 17430)	2014	77.00	77.00	0.00	BCKVV, Nadia
83	Gontra Bindhan-3 (IET 22752)	1983	20.70	21.00	0.30	GBPUAT, Pantnagar
84	GOVIND	2013	0.40	11.09	10.69	GAU, Nawagam
85	HAZARIDHAN	2005	2.50	2.50	0.00	CRURRS, Hazaribagh
86	HKR-127 (HKR-95-222)	2010	2.60	10.40	7.80	RRS, Kaul
87	HKR-47	2007	4.10	10.40	6.30	RRS, Kaul
88	HKR-48	2016	1.10	3.20	2.10	RRS, Kaul
89	Hmt Sona		1.50	0.00	-1.50	ZARS, Sindewahi
90	HPR 2143	2006	8.00	1.50	-6.50	CSKHPKVV, Malan
91	HPR-1068	2006	5.00	8.00	3.00	CSKHPKVV, Malan
92	HPR-1156 (IET-16007)	2004	9.90	1.20	-8.70	CSKHPKVV, Malan
93	HPR-2612 (Palam Basmati-1)		2.00	10.00	8.00	CSKHPKVV, Malan
94	HPR-2720		2.00	0.50	-1.50	CSKHPKVV, Malan
95	HPR-2880		3.00	1.80	-1.20	CSKHPKVV, Malan
96	HUR-917	2017	16.00	32.40	16.40	BHU, Varanasi
97	IGKVR-1 (IET-19569)	2011	90.00	120.00	30.00	IGAU, Raipur
98	IGKVR-2 (IET 19795)	2011	52.00	54.90	2.90	IGAU, Raipur
99	IGRKVR-1244 (R1244-1246-1-605-1)(IET 19796)	2012	58.00	60.60	2.60	IGAU, Raipur
100	IMPROVED LALAT	2012	15.70	0.00	-15.70	OUAT, Bhubaneshwar
101	Improved Pusa Basmati-1 (IET - 18990)	2007	2.10	2.50	0.40	ICAR-IARI, Regional Station, Karnal
102	Improved Samba Mahsuri (RP Bio-226)	2008	27.00	30.00	3.00	ICAR-IIRR, Hyderabad
103	Indira Aerobic- 1 (R1570-2649-1-1546-1)	2015	16.00	16.20	0.20	IGAU, Raipur
104	INDIRA BARANI DHAN-1 (RF-17-38-70)(IET 21205)	2012	35.00	45.00	10.00	IGAU, Raipur
105	Indra(MTU - 1061)	2007	7.00	7.00	0.00	ANGRAU, Guntur
106	Indrayani (IET - 12897)	1993	16.00	38.00	22.00	Vadagaon
107	INTAN	1992	2.00	3.00	1.00	ARS, Mugad
108	IR-36	1982	16.00	27.00	11.00	IGAU, Raipur
109	IR-64	1991	58.50	64.50	6.00	IGAU, Raipur
110	IR64 Drt 1(IET 22836) (DRR-42)	2015	95.00	64.50	-30.50	ICAR-IIRR, Hyderabad & NRRI, Cuttack
111	JAJATI (IET - 7284)	1985	0.50	0.00	-0.50	OUAT, Bhubaneshwar
112	Jaldbi (IET - 17153)	2007	1.00	1.10	0.10	IGAU, Raipur
113	JAYA	1969	17.20	4.20	-13.00	ICAR-IIRR, Hyderabad

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
114	JGL-1798	2004	4.70	4.70	0.00	PJTSAU,Rajendranagar
115	JGL-18047 (Bathukamma)	2016	6.50	6.50	0.00	PJTSAU,Rajendranagar
116	JR 767	2016	10.00	124.97	114.97	JNKVV, Jabalpur
117	JR-503 (Richa) (IET-16783)	2005	0.50	0.00	-0.50	JNKVV, Jabalpur
118	Jyothi	1977	12.50	35.00	22.50	KAU, Pattambi
119	KALACHAMPA	2015	10.00	10.00	0.00	SSTL, BBSR, Govt of Odisha
120	KARJAT-184	2010	1.00	3.59	2.59	RARS, Karjat
121	KARJAT-2	1996	1.32	4.80	3.48	RARS, Karjat
122	KARJAT-3	1996	5.00	5.44	0.44	RARS, Karjat
123	Karjat-5	2007	2.80	4.48	1.68	RARS, Karjat
124	KARJAT-6	2007	1.88	5.12	3.24	RARS, Karjat
125	Karjat-7	2009	3.00	7.36	4.36	RARS, Karjat
126	KARJAT-8	2012	1.00	7.36	6.36	RARS, Karjat
127	Karma Mahsuri (IET 19991)	2008	20.00	29.10	9.10	IGAU, Raipur
128	KAVYA (WGL-48684)	1993	0.50	0.60	0.10	PJTSAU,Rajendranagar
129	KHANDAGIRI	1994	9.70	9.70	0.00	OUAT, Bhubaneshwar
130	KHITISH (IET-4094)	1984	8.60	13.00	4.40	RRS, Chnisurah & NRRI Cuttack
131	KMD-2 (ABHILASH)	1987	1.25	4.00	2.75	ARS, Mugad
132	KNM-118	2016	16.20	16.20	0.00	PJTSAU,Rajendranagar
133	KRANTI (R-2022)	1982	19.10	2872.20	2853.10	JNKVV, Jabalpur
134	KRISHNA HAMSA	1998	0.05	0.30	0.25	ICAR-IIRR, Hyderabad
135	LALAT (IET-9947)	1989	46.00	13.00	-33.00	OUAT, Bhubaneshwar
136	Lunasampad (IET 19470)	2011	1.60	1.80	0.20	NRRI, Cuttack
137	Lunasuwarna (IET 18697)	2011	1.60	1.80	0.20	NRRI, Cuttack
138	Lunusree	1992	0.60	0.00	-0.60	NRRI, Cuttack
139	MAHAMAYA (IET-10749)	1996	26.60	27.00	0.40	IGAU, Raipur
140	Manaswini (IET 19005)	2008	5.00	6.00	1.00	OUAT, Bhubaneshwar
141	MANDAKINI (OR 2077-4) (IET 17847)	2011	10.30	10.00	-0.30	OUAT, Bhubaneshwar
142	Maruteru sannalu (MTU-1006, IET-14348)	2000	1.30	1.30	0.00	ANGRAU, Guntur
143	MASURI	1974	2.00	2.80	0.80	ICAR-IIRR, Hyderabad
144	MRUNALINI (OR 1898-18) IET 18649	2011	5.00	18.00	13.00	OUAT, Bhubaneshwar
145	MTU 1075 (IET 18482)	2008	18.00	18.00	0.00	ANGRAU, Guntur
146	MTU-1031 (Tholakuri)	2004	0.30	0.30	0.00	ANGRAU, Guntur
147	MTU-1032 (Godavari)	2004	0.30	0.30	0.00	ANGRAU, Guntur
148	MTU--1038		3.00	0.00	-3.00	ANGRAU, Guntur
149	MTU-1081		0.10	0.00	-0.10	ANGRAU, Guntur
150	MTU-1156	2016	0.30	0.30	0.00	ANGRAU, Guntur
151	MTU-1210		1.00	0.00	-1.00	ANGRAU, Guntur
152	MTU-7029	1985	237.20	105.00	-132.20	ANGRAU, Guntur
153	Narendra Dhan 97	1992	1.10	5.40	4.30	NDUAT, Faizabad
154	Narendra Usar Dhan-	2010	1.10	0.00	-1.10	NDUAT, Faizabad

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
	2008 (NDRK-5088) IET-18699)					
155	Narendra-8002 (IET-15848)	2005	1.10	34.00	32.90	NDUAT, Faizabad
156	NAVEEN (CR-749-20-2) (IET-14461)	2006	50.00	87.20	37.20	AAU, Titabar, NRRI Cuttack
157	NDR 2064 (IET 17475)	2009	1.10	58.50	57.40	NDUAT, Faizabad
158	NDR 2065 (IET 17476)	2011	1.10	54.65	53.55	NDUAT, Faizabad
159	NDR-359	1994	1.10	16.00	14.90	NDUAT, Faizabad
160	Nellore Mahsuri (NLR-34449)	2010	34.50	0.00	-34.50	ANGRAU, Guntur
161	NLR-145	1993	7.00	0.00	-7.00	ANGRAU, Guntur
162	PANKAJ	1978	0.90	0.00	-0.90	OUAT, Bhubaneshwar
163	Pant Dhan 18 (IET 17920) (UPRI 99-1)	2007	1.00	13.80	12.80	GBPUAT, Pantnagar
164	PANT DHAN-10 (IET - 8616)	1993	0.30	12.42	12.12	GBPUAT, Pantnagar
165	PANT DHAN-11 (IET - 9620)	1993	0.30	25.70	25.40	GBPUAT, Pantnagar
166	PANT DHAN-12 (IET-10955)	1996	1.10	7.92	6.82	GBPUAT, Pantnagar
167	Pant Dhan-19(IET 17544)	2007	0.30	24.30	24.00	GBPUAT, Pantnagar
168	PANT DHAN-24	2015	10.00	44.12	34.12	GBPUAT, Pantnagar
169	Pardhiva (NLR - 33892)	2007	3.00	3.00	0.00	ANGRAU, Guntur
170	PARIJAT (IET-2684)	1985	6.10	4.40	-1.70	OUAT, Bhubaneshwar
171	PAU-201	2008	2.40	6.00	3.60	PAU, Ludhina
172	Phalguni (IET 18720) CRAC 2224-1041)	2011	0.50	1.00	0.50	NRRI, Cuttack
173	Phule Samrudhi	2010	6.00	21.50	15.50	Vadagaon
174	PKV HMT	2008	79.60	116.89	37.29	ADR, Sindewahi
175	Pooja(IET-12241)	1999	44.10	76.20	32.10	NRRI, Cuttack
176	Poorna Bhog	2012	0.30	0.10	-0.20	NRRI, Cuttack
177	POORNIMA (IET-12284, R-281-PP-31-1)	1997	5.50	6.90	1.40	IGAU, Raipur
178	PR 121	2015	28.00	30.00	2.00	PAU, Ludhina
179	PR-111	1995	8.04	9.00	0.96	PAU, Ludhina
180	PR-113	2001	9.10	11.00	1.90	PAU, Ludhina
181	PR-114	2001	19.10	28.00	8.90	PAU, Ludhina
182	PR-116	2001	2.20	4.30	2.10	PAU, Ludhina
183	PR-118	2007	13.60	25.00	11.40	PAU, Ludhina
184	PR-122		17.40	20.00	2.60	PAU, Ludhina
185	PR-123		4.70	6.00	1.30	PAU, Ludhina
186	PR-124	2015	10.70	12.00	1.30	PAU, Ludhina
187	PR-126		34.10	40.00	5.90	PAU, Ludhina
188	Pratap-1 (RSK-1091-10-1-1)	2013	0.10	0.10	0.00	MPUAT, Kota
189	Pratikshya (ORS 201-5) (IET-15191)	2006	60.70	89.00	28.30	OUAT, Bhubaneshwar
190	PTB-45 (Matta Triveni)	2006	2.00	5.00	3.00	KAU, Pattambi
191	Punjab Basmati - 2	2012	0.10	1.00	0.90	PAU, Ludhina
192	Punjab Basmati - 3	2016	1.10	4.00	2.90	PAU, Ludhina
193	Punjab Basmati - 4		0.25	1.00	0.75	PAU, Ludhina

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194	Punjab Basmati - 5		5.70	5.70	0.00	PAU, Ludhina
195	PUSA 1592 (IET 22289)	2015	1.20	8.00	6.80	IARI, New Delhi
196	Pusa Basmati- 1121	2005	69.00	69.00	0.00	BEDF, New Delhi, ICAR-IARI, RS, Karnal
197	Pusa Basmati -1637	2016	20.00	20.00	0.00	ICAR-IARI,RS , Karnal
198	Pusa Basmati -1728	2016	10.00	10.00	0.00	ICAR-IARI,RS , Karnal
199	PUSA BASMATI-1 (IET-10364)	1989	23.00	24.50	1.50	BEDF, New Delhi & I ICAR-IARI, RS, Karnal
200	Pusa Basmati-1509 (IET 21960)	2013	46.00	48.00	2.00	BEDF, New Delhi, ICAR-IARI, RS, Karnal
201	PUSA BASMATI-6 (IET 18005)	2010	20.00	20.00	0.00	ICAR-IARI, RS, Karnal
202	PUSA SUGANDH-2 (IET-16310, PUSA-204-1-126)	2001	0.40	0.00	-0.40	ICAR-IARI, RS, Karnal
203	PUSA SUGANDH-3 (IET-16313, PUSA 2504-1-3-1)	2001	0.50	0.00	-0.50	ICAR-IARI, RS, Karnal
204	Pusa Sugandh-5(IET-17021)	2005	40.00	80.00	40.00	IARI, New Delhi
205	PUSA-44	1994	35.00	35.00	0.00	ICAR-IARI, RS, Karnal
206	PUSA-6 (IET 22290) (PUSA 1612-07-6-5)	2013	1.90	8.00	6.10	IARI, New Delhi
207	Pushpa (IET 17509)	2015	1.60	1.00	-0.60	RRS, Chnisurah
208	Rajendra Bagavathi	2010	81.00	90.50	9.50	RAU, PUSA
209	Rajendra Kasturi	2007	1.50	2.20	0.70	RAU, PUSA
210	Rajendra Mahsuri-1	2007	64.00	63.88	-0.12	RAU, PUSA
211	Rajendra Suwasini	2007	1.50	2.00	0.50	RAU, PUSA
212	Rajendra Sweta	2007	32.60	32.60	0.00	RAU, PUSA
213	Rajshree(TCA-80-4) (IET-7970)	1989	0.40	0.40	0.00	RAU, PUSA
214	Rani Dhan (IET-19148)	2009	13.20	20.00	6.80	OUAT, Bhubaneshwar
215	Ranjit	1994	20.70	22.80	2.10	AAU,Jorhat
216	RASHMI(JR-201)	2008	10.00	19.40	9.40	JNKVV, Jabalpur
217	RASI (IET- 1444)	1978	0.30	0.50	0.20	ICAR-IIRR, Hyderabad
218	RATNAGIRI-1	1990	0.60	60.70	60.10	ARS, Ratanagiri
219	RATNAGIRI-2	1990	1.00	1.50	0.50	ARS, Ratanagiri
220	RATNAGIRI-24 (RTN-24) (IET-19812)	2010	3.00	11.50	8.50	ARS, Ratanagiri
221	RNR-15048	2014	10.30	11.00	0.70	PJTSAU,Rajendranagar
222	RTN-5	1974	2.00	17.50	15.50	ARS, Ratanagiri
223	SABITA (IET-8970)	1987	4.90	6.00	1.10	RRS, Chnisurah
224	SAHBHAGI DHAN (IET 19576)	2011	383.70	231.00	-152.70	CRURRS, Hazaribagh
225	SAMALEI (IET-3350)	1989	0.10	0.00	-0.10	NRRI, Cuttack
226	Samba Mahsuri (BPT-5204)	1989	91.60	91.60	0.00	ANGRAU, Guntur
227	Sambha Sub - 1 (IET 21248)	2015	23.50	7.80	-15.70	NRRI, Cuttack
228	Sampada (IET 19424)	2008	43.00	47.80	4.80	ICAR-IIRR, Hyderabad
229	SAMPRITI (BNKR-B12) (IET-21987)	2017	2.40	2.40	0.00	RRS, Chnisurah
230	SARALA CR-260-77	2002	5.60	21.00	15.40	NRRI, Cuttack

S.No	Name of variety	Year	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)	Name of the Producing centre
	(IET-10279)					
231	Sarjoo-52	1982	5.90	16.00	10.10	NDUAT, Faizabad
232	SATYABHAMA	2012	12.00	3.00	-9.00	NRRI, Cuttack
233	SAVITRI (IET - 5897) (CR 1009)	1983	4.60	11.40	6.80	NRRI, Cuttack
234	SHATABDI (IET-4786)	2000	56.00	50.00	-6.00	RRS, Chnisurah & NRRI Cuttack
235	Shusk Samrat (NDR 1045-2) (IET-17458)	2007	0.30	6.80	6.50	NDUAT, Faizabad
236	SJR 5	2011	10.00	12.00	2.00	SKUAST, Chatha
237	Sri Dhruthi (MTU-1121)	2016	2.30	2.30	0.00	ANGRAU, Guntur
238	Srikakulam Sannalu (RGL-2537)	2000	10.00	10.00	0.00	ANGRAU, Guntur
239	Sujala (CNR-2) (IET 20235)	2013	10.10	5.00	-5.10	RRS, Chnisurah
240	SUKHA DHAN-6	2015	0.10	0.00	-0.10	ICAR-IIRR, Hyderabad
241	SURENDRA (IET-12815)	1999	1.40	2.00	0.60	OUAT, Bhubaneshwar
242	SWARANA-SUB 1 (CR 2539-1) IET-20266	2009	314.70	125.10	-189.60	NRRI, Cuttack
243	Swarna Shreya	2016	10.00	12.50	2.50	ICAR-Patna
244	Tarunbhog Selection-1	2016	4.00	4.50	0.50	IGAU, Raipur
245	TELLAHAMSA	1975	2.70	2.70	0.00	PJTSAU,Rajendranagar
246	Thanu	2008	3.30	4.00	0.70	UAS, Bangalore
247	Tunga (IET-13901)	2006	5.10	0.00	-5.10	UAS, Bangalore
248	UDAYAGIRI (IET-12316)	1999	0.30	2.60	2.30	OUAT, Bhubaneshwar
249	Uma		6.80	8.00	1.20	RRS, Monocompu
250	Vallabh Basmati-24 (IET 20827)(MAUB-171)	2015	2.00	2.25	0.25	SVBAUA&T Meerut
251	VANDANA (RR-167-982)	2002	2.04	2.10	0.06	CRURRS, Hazaribagh
252	Varsha (PTB-56)	2006	0.30	0.10	-0.20	KAU, Pattambi
253	Varshadhan(CRLC-899) (IET-15296)	2006	15.30	16.20	0.90	NRRI, Cuttack
254	Vijetha (MTU-1001)	1997	124.00	124.00	0.00	ANGRAU, Guntur
255	Vishnubhog Selection-1	2016	1.50	2.30	0.80	IGAU, Raipur
256	VL Dhan 157 (VL 31611) (IET 22292)	2014	0.40	0.20	-0.20	VIHA, Almora
257	VL Dhan 65	2007	0.30	1.00	0.70	VIHA, Almora
258	VL Dhan 68 (VL 31611) (IET 22283)	2014	7.30	6.50	-0.80	VIHA, Almora
259	VL Dhan-86 (VL 97-3861) (IET-16863)	2007	0.30	0.50	0.20	VIHA, Almora
260	VL.Dhan 85 (IET-16455) (VL-3613)	2006	0.30	0.90	0.60	VIHA, Almora
261	WARANGAL SAMBA (WGL-14)	2005	0.30	4.00	3.70	PJTSAU,Rajendranagar
262	Warangal Sannalu (WGL-32100)(IET 18044)	2007	10.00	10.00	0.00	PJTSAU,Rajendranagar
Sub Total			**4323.23**	**7204.33**	**2881.10**	

HYBRIDS

S. No.	Name of the Centre	Name of hybrid	Allocation BSP-I	Actual Prod.	Surplus (+) Deficit (-)
1.	UAS, Bangalore	**KRH-4**			
		A-Line	0.23	1.00	0.77
		B-Line	0.06	0.50	0.44
		R-Line	0.06	0.20	0.14
		Total	**0.35**	**1.70**	**1.35**
2.	RARS, Karjat	**SAHYADRI-3**			
		A Line	0.10	0.41	0.31
		B Line	0.03	0.17	0.14
		R Line	0.03	0.10	0.07
		SAHYADRI-4			
		A Line	0.15	0.40	0.25
		B Line	0.05	0.15	0.10
		R Line	0.03	0.05	0.02
		SAHYADRI-5			
		A Line	0.15	0.18	0.03
		B Line	0.05	0.27	0.22
		R Line	0.05	0.41	0.36
		Total	**0.64**	**2.14**	**1.5**
3.	NRRI, Cuttack	CRMS 31-A	0.18	0.00	-0.18
		CRMS 31-B	0.09	0.00	-0.09
		CRMS 32-A	0.18	0.00	-0.18
		CRMS 32-B	0.09	0.00	-0.09
		Total	**0.54**	**0.00**	**-0.54**
		Total (Hybrids)	**1.53**	**3.84**	**2.31**
		Grand Total	**4324.73**	**7208.17**	**2883.44**

Appendix-12

Breeder Seed Production of Additional Rice Varieties / State Indents during Kharif, 2018

(Quantity in Quintals)

S .No	Name of the Producing centre	Name of variety	Produced
1	**CRURSS, Hazaribagh**	IR 64 DRT 1	3.00
		Sadabahar	1.00
		Virendra	0.50
		TOTAL	**4.50**
2	**NDUA, Faizabad**	BPT 5204	115.90
		Swarna Sub 1	38.70
		Samba Sub 1	20.80
		NDR 3112-1	40.05
		Narendra lal mati	0.80
		MTU 7029	27.45
		Sughandha-5	14.00
		Baranidhi	3.84

S .No	Name of the Producing centre	Name of variety	Produced
		Bina 11	28.00
		TOTAL	**289.54**
3	**PAU, Ludhiana**	PR 121	40.00
		PUSA 1121	5.00
		PUSA 1509	3.00
		TOTAL	**48.00**
4	**OUAT, Bhubaneswar**	Upahar	9.00
		TOTAL	**9.00**
5	**RARS, Pattambi**	Uma	3.00
		Harsha	1.50
		Aishwarya	2.50
		KK Varna	2.50
		Annapurna	0.50
		Kanchana	2.50
		Swarnapraba	1.00
		Samtultha	0.50
		Anaswara	1.00
		Karuna	3.00
		Neeraja	3.00
		Jaya	5.00
		Ponmani	2.50
		Mangalamahsuri RM 1	2.50
		Prashyasa	2.00
		Sampada	1.50
		Jeerakasala	0.50
		Makaram	2.50
		Swetha	1.50
		Shreyas	2.50
		Supriya	3.00
		Akshaya	3.00
		Vellari	0.02
		Parambuvattan	0.20
		Thavalakannan	0.20
		Thekkencheera	0.20
		Thekkenchitteni	0.20
		Kavungin Poothala L	0.20
		Kavungin Poothala E	0.20
		Eravapandi	0.10
		Thekkan	0.10
		Thonnuran	0.20
		Chenkayama	0.30
		Kattamodan	0.10
		Karutha modan	0.10
		Chuvannna Modan	0.20
		Arikkirai	0.10
		TOTAL	**49.90**
6	**RRS, Chinsurha**	Rajdeep (IET 17713)	3.40
		TOTAL	**3.40**

S .No	Name of the Producing centre	Name of variety	Produced
7	**CSK HPKV, Palampur**	HPR 1156	1.20
		HPR 2720	0.50
		HPR 2880	1.80
		TOTAL	**3.50**
8	**RVSKVV, MP**	Karthi	80.00
		PS 4 (1121)	132.00
		TOTAL	**212.00**
9	**ARS, Mugad**	Prasana	10.00
		MGD 101	10.00
		MTU 1010	10.00
		SIRI 1253	50.00
		BPT 5204	25.00
		RP Bio226	25.00
		MGD 103	10.00
		Mugad Suganda	50.00
		K 44-1	10.00
		PSB 68	25.00
		Hemavathi	25.00
		Intan	125.00
		TOTAL	**375.00**
10	**RRLRRS, Geura**	Chandrama	45.80
		Naveen	62.20
		Sahabhagi Dhan	11.60
		CR Dhan 310	19.60
		CR Dhan 909	7.58
		TOTAL	**146.80**
11	**RARS, Moncompu**	Mo 21(Prashyaka)	2.00
		Mo 22 (Shreyas)	3.00
		TOTAL	**5.00**
12	**CSSRI, Karnal**	CSR-46	4.20
		CSR-49	2.50
		CSR-52	2.40
		CSR-56	2.80
		CSR-60	3.60
		TOTAL	**15.50**
13	**RRS, Kaul, Haryana**	PUSA Basmati 1121	6.80
		PUSA Basmati 1	4.00
		Taraori Basmati	3.20
		Basmati CSR 30	8.00
		BasmatI 317	3.60
		TOTAL	**25.60**
14	**AAU, Jorhat**	Ranjit	190.00
		Bahadur	42.55
		Swarna Sub 1	37.40
		Ranjit Sub 1	24.70
		Gitesh	22.80
		Bahadur Sub 1	19.60
		Keteki Joha	16.30

S .No	Name of the Producing centre	Name of variety	Produced
		Luit	14.50
		Mahsuri	7.70
		Swarna	4.30
		Manoharsali	0.80
		Aghoni	1.30
		Lachit	0.40
		TOTAL	**382.35**
15	**ICAR-VPKAS, Almora**	VL Dhan 68	7.30
		VL Dhan 157	0.40
		TOTAL	**7.70**
16	**G.B PUAT, Pantnagar**	Pusa 44	14.68
		PR 113	96.92
		NDR 359	48.88
		Pant Basmati 1	37.37
		Pant Dhan 26	32.37
		Pant Sugandh Dhan 27	4.23
		Pant Sugandh Dhan 17	4.15
		Pusa Basmati 1	14.81
		Pusa Sugandh 4 (Pusa 1121)	72.72
		PR 114	15.57
		PR 121	96.09
		HKR 47	79.96
		PR 124	17.01
		MTU 7029	39.78
		BPT 5204	26.98
		Type 3	5.37
		Type 3 (Organic)	6.72
		Pant Dhan 22	4.98
		Pant Dhan 28	10.73
		Pusa Sugandh 5 (Pusa 2511)	11.34
		HKR127	31.10
		TOTAL	**671.8**
		Grand Total	**2249.62**

Appendix 13

Breeder Seed Production Proformae

The Calendar of events for breeder seed production are as under : **Co-operators are requested to please comply with the schedule**

Proforma BSP I : Allocation of Breeder Seed Production of Varieties/ Parental lines of Rice hybrids

S. No	Variety	Name of the producing Breeder/ Institution	Quantity allotted (Qtls)	Members of monitoring team

Action:

- **BSP I will be sent to respective centres in the last week of April by IIRR after rice workshop.**

Proforma BSP II: Time of production and availability of Breeder Seed

S. No	Variety/ Parental lines	Quantity targeted (Qtls)	Area sown (ha)	D/S	D/P	Field location	Expected fortnight for monito-ring	Expected date of Harvest	Expected Produc-tion (Qtls)	Expected date of availa-bility

Action:

- **BSP II should positively reach IIRR in the last week of September**

Proforma BSP III: Inspection Report of the Monitoring Team

Sl. No	Variety	Area under variety (ha)	Field Location	Authority under which grown		Report of Monitoring Team	Expected Production (Qtls)
				Date of Proforma BSP-I	Date of Proforma BSP-II		

Action:

- **BSP III should positively reach IIRR in the second fortnight of November**

Proforma BSP IV : Report on Breeder Seed Production actually produced

(a) Breeder Seed Produced as per DAC indent

Variety/ Parental lines	Quantity of B.S. allotted as per BSP I	Quantity of B.S. actually produced (Qtls)	Comments of the Monitoring Team (Satisfactory/ Unsatisfactory)

b) Breeder Seed Produced in addition to above allocation, if any

Variety/ Parental lines	Quantity of B.S. produced (Qtls)	Comments of the Monitoring Team (Satisfactory/ unsatisfactory)

(c) Carry over seed, if any

Variety/ Parental lines	Year of Production	Quantity	Germination Percentage	
			Previous year	Current year

Action:

- **BSP IV should positively reach IIRR in the second fortnight of December (*If BSP data is submitted timely, we can minimize the problems of non lifting.)***

Proforma BSP V : Report of Grow Out Test

Proforma BSP VI : Report on the Status of Lifting/Non-lifting /Supply position for theprevious season.

- **Status of breeder seed produced in the previous season / year and supplied to various seed agencies / state dept. of Agriculture as per the DAC allotment in other words lifting / non-lifting / supply position may kindly be sent to DRR positively in the second fortnight of September.**

Name of the producing centre	Variety	Target set	Actual production	Allocation (Agency wise)	Lifting (Agency wise)	Balance if, any	Remarks

Action:

- **BSP VI should positively reach DRR in the second fortnight of September**

All the proforma should be distributed to:

1. Asst. Director General (Seeds), ICAR, Krishi Bhavan, New Delhi – 110 001.
2. Deputy Commissioner (Seeds), Department of Agriculture and Co-operation, Ministry of Agriculture, Shastri Bhavan, New Delhi – 110 001
3. Director, ICAR-Indian Institute of Rice Research, Rajendranagar, Hyderabad – 500 030.
4. Director, ICAR-Indian Institute of Seed Science, Village: Kusmaur (P.O.Kaithili), Mau Nath Bhanjan, Uttar Pradesh.
5. General Manager (Production), National Seed Corporation, Beej Bhawan, Pusa Campus, New Delhi – 110 012.

Appendix-14

Promising Entries in Varietal Trials, Kharif 2018

S.No.	IET No.	Designation	GT	DFF	Yield (kg/ha)	Trial	Promising for
1	26337	CRR 747-12-3-B	LS	65	2107	AVT 1-E DS	Promising in Zone-III for Jharkhand and VII.
2	25856	MTU 1223	MS	131	6041	AVT 1-RSL	Promising in Zone-III for Odisha and Bihar.
3	25713	***LP 1621 (Hybrid)***	LS	85	6516	AVT 1-ETP	Promising for Jharkhand
4	26126	OR 2512-2	LS	98	6736	AVT 2-IME	Promising for Odisha, Chhattisgarh and Maharashtra.
5	26079	JR 206	LB	98	5742	AVT 2-IME	Promising for Odisha and Bihar
6	26125	JGL 21078	LS	91	5831	AVT 2-IME	Promising for Telangana and Gujarat.
7	25749	***NK 20050 (Hybrid)***	LB	99	6730	AVT 2-IME	Promising for Jammu & Kashmir
8	25746	***KPH 471 (Hybrid)***	LS	94	7387	AVT 2-IME	Promising for Telangana
9	25745	***PHI 16101 (Hybrid)***	LB	97	7189	AVT 2-IME	Promising for Chhattisgarh, Maharashtra and Jammu & Kashmir.
10	24931	***RH 9000 Plus (Hybrid)***	LS	96	6958	AVT 2-IME	Promising for Gujarat
11	25764	***MP 3030 (Hybrid)***	LS	96	6869	AVT 2-IME	Promising for Maharashtra & Gujarat
12	25785	***ADV 1603 (Hybrid)***	LB	109	7532	AVT 2-IM	Promising for Zone-II
13	26027	WGL-697	MS	108	7289	AVT 2-IM	Promising in Zone-VII for Andhra Pradesh and Telangana.
14	26024	OR 2573-15	LB	106	7169	AVT 2-IM	Promising in Zone-VII for Andhra Pradesh and Tamil Nadu.
15	25269	***MEPH 126 (Hybrid)***	MS	115	6428	AVT 1-L	Promising in Zone-III for Bihar and Zone-V for Chhattisgarh.
16	25838	HPR 2748	LS	110	4012	AVT 1-M (H)	Promising for Uttarakhand
17	26171	RP 5601-283-14-4-1	SB	85	5432	AVT 2-Aerob	Promising in Zone-III for Bihar
18	25640	RCPR 22-IR 84899-B-183-20-1-1-1	SB	91	5065	AVT 2-Aerob	Promising for Zone-VI for Gujarat.
19	26157	CR 3996-11-240-3-1	SB	85	5293	AVT2-Aerob	Promising in Zone-III for Bihar
20	25653	RP 5943-421-16-1-1-B	SB	80	5793	AVT 2-Aerob	Promising in Zone-III for Bihar
21	26383	RP 5115-111-24-3-1-1	SB	99	5651	AVT 1-Biofort	Promising in Zone-II for Punjab and in Zone-VII for Kerala

S.No.	IET No.	Designation	GT	DFF	Yield (kg/ha)	Trial	Promising for
22	26227	OR 2560-6	MS	103	6390	AVT 2-MS	Promising for Chhattisgarh & Telangana
23	26263	MTU 1239	MS	108	7398	AVT 2-MS	Promising in Zone-VII for Tamil Nadu and Andhra Pradesh
24	25793	***MEPH-129 (Hybrid)***	MS	96	6577	AVT 2-MS	Promising in Zone-VI for Maharashtra
25	25798	***TMRH-124 (Hybrid)***	MS	85	6497	AVT 2-MS	Promising for Maharashtra
26	26241	RP 6112-SM-M-93-3-2-3-4-3	MS	100	6192	AVT 2-MS	Promising for Chhattisgarh, Telangana and Karnataka.

Appendix-15

CONSTITUTION OF VARIETY TRIALS-2019

Trial	Test Entries	
1.	**ADVANCE VARIETY TRIAL-1-Early Direct seeded (AVT-1-E DS)**	
	3rd Year of testing	None
	2nd Year of testing	27508 (O), 27512 (O), 27513 (III), 27514 (O), 27517 (O, III), 27518 (III), 27521 (O), 27523 (O), 27525 (O, VI, VII), 27526 (O), 27528 (O, VII), 27530 (III), 27531 (O, VII), 27532 (O, III), 27534 (O) Repeats: 26633(VI), 26635(VI), 26636(VI), 26351(III, VI)
	Checks	National: Sahbhagidhan and Vandana; Zonal: Govind, Anjali (Northern), Narendra 97 (Eastern), Samleshwari (Central),Varalu and Tulasi (Western and Southern); Hybrid: US 314 and Local Check Sensitive check GNV Ageti
2.	**INITIAL VARIETY TRIAL-Early Direct seeded (IVT-E DS)**	
	New Nominations:	
	Checks	National: Sahbhagidhan and Vandana; Zonal: Govind (Northern), Narendra 97 (Eastern), Samleshwari (Central),Varalu and Tulasi (Western and Southern); Hybrid: US 314 and Local Check, Sensitive check GNV Ageti
3.	**ADVANCE VARIETY TRIAL 1- RAINFED SHALLOW LOWLAND (AVT 1-RSL)**	
	3rd Year of testing	26692 (III)
	2nd Year of testing	27537 (VII), 27538 (O, III, VII), 27541 (III), 27547 (O, III, VII), 27555 (III)
	Checks	National: Swarna Sub1, Zonal: Pooja (Eastern), Bahadur (North Eastern), Savitri (Southern) and Local Check
4.	**INITIAL VARIETY TRIAL - RAINFED SHALLOW LOWLAND (IVT -RSL)**	
	New Nominations:	
	Checks	National: Swarna Sub1, Zonal: Pooja (Eastern), Bahadur (North Eastern), Savitri (Southern) and Local Check

Trial	Test Entries	
5.	**ADVANCE VARIETY TRIAL 1- SEMI DEEP WATER (AVT1 -SDW)**	
	3rd Year of testing	25912 (III)
	2nd year of testing	26684 (III), 27574 (III), 27576 (III), 27578 (III), 27583 (III), 25212 (III) (R)
	Checks:	National: CR Dhan 506; Zonal: Purnendu and MTU 1172 and Local.
6.	**INITIAL VARIETY TRIAL - SEMI DEEP WATER (IVT -SDW)**	
	New Nominations:	
	Checks:	National: CR Dhan 506; Zonal: Purnendu and MTU 1172 and Local.
7.	**INITIAL VARIETY TRIAL –DEEP WATER (IVT-DW)**	
	2nd year of testing	26741 (R)
	New Nominations:	
	Checks:	National: CR Dhan 500, Zonal: Dinesh and Local.
8.	**ADVANCE VARIETY TRIAL 1 –EARLY TRANSPLANTED (AVT2-E TP)**	
	3rd Year of testing	26477 (V), 26468 (V), 26767 (II), 26771 (II), 26803 (II)
	Checks:	National: CO-51, Zonal- PR 124 (Northern), Luit (North Eastern), Sahbhagidhan (Central & Western), Narendra 97 (Eastern), MTU 1153 (Southern) and Local Check.
9.	**ADVANCE VARIETY TRIAL 1 –EARLY TRANSPLANTED (AVT1-E TP)**	
	2nd Year of testing:	27866 (O,III,V,VII), 27869 (O,III,V,VII), 27874 (O,II,III), 27875 (III), 27880 (III), 27882 (III,V), 27883 (O,II,III,V), 27885 (V), 27890 (III,V), 27891 (II,III), 27892 (III,V), 27893 (V), 27894 (III), 26898 (III), 27905 ((III,V), 27906 (V), 27907 (III), 27912 (III), 27913 (III, VI), 27914 (O,III,V,VII), 27917 (VII), 27919 (III), 27920 (V), 27896 (III), 26763(R), 27870(III), 27871(II), 27886(III), 27887(V), 27903(V), 27923(V, VII), IHRT E : 27328 (III & VII), 27329 (III), 27330 (VI), 27332 (III), 27337 (O), 27340 (III), 27342 (III), 27343 (II, III, VI).
	Checks:	National: CO-51, Zonal- PR 124 (Northern), Luit (North Eastern), Sahbhagidhan (Central & Western), Narendra 97 (Eastern), MTU 1153 (Southern) and Local Check.
10.	**INITIAL VARIETY TRIAL –EARLY TRANSPLANTED (IVT-E TP)**	
	New Nominations: Shift from IVT-IME 27752, 27764, 27782	
	Checks:	National: CO-51, Zonal- PR 124 (Northern), Luit (North Eastern), Sahbhagidhan (Central & Western), Narendra 97 (Eastern), MTU 1153 (Southern) and Local Check.
11.	**ADVANCE VARIETY TRIAL 2- IRRIGATED MID-EARLY (AVT 2-IME)**	
	3rd year of testing:	24967 (V)
	Checks:	IR 64-National, (PR 113 (Northern), Lalat (Eastern and North Eastern), Karjat-7 (Western), MTU 1010 (Central and Southern)-Zonal, US 312- Hybrid and Local Check
12.	**ADVANCE VARIETY TRIAL 1- IRRIGATED MID-EARLY (AVT 1-IME)**	
	2nd year of testing:	26861 (III,V), 26936 (III,V), 26961 (V), 27736 (V), 27737 (II), 27739 (O,II), 27743 (II), 27746 (II), 27747 (O,III,V), 27748 (II,V), 27750 (II), 27755 (II), 27757 (III,V), 27758 (II), 27762 (V), 27763 (V), 27768 (V,VI), 27770 (II,III), 27772 (V,VI), 27773 (II), 27775 (V), 27781 (V), 27785 (III), 27788 (V), 27790 (V), IHRT-ME : 27346 (II, V), 27353 (VI) 27356 (II, V), 27357 (II), 27358 (O), 27360 (V, VI), 27362 (O), 27364 (II), 27366 (O), 27369 (II)

Trial	Test Entries	
	Checks:	IR 64-National, (PR 113 (Northern), Lalat (Eastern and North Eastern), Karjat-7 (Western), MTU 1010 (Central and Southern)-Zonal, US 312- Hybrid and Local Check
13.	**INITIAL VARIETY TRIAL –IRRIGATED MID-EARLY (IVT-IME)**	
	New Nominations: Shift from IVT-IME 27668, 27695 Shift from IVT-E TP 27896, 27908, 27876	
	Checks:	Gondhra Bidhan 3-National, (PR 113 (Northern), Lalat (Eastern and North Eastern), Karjat-7 (Western), MTU 1010 (Central and Southern)- Zonal and Local Check
14.	**ADVANCE VARIETY TRIAL 2- IRRIGATED MEDIUM (AVT 2-IM)**	
	3rd year of testing:	26118 (II, VII), 26086 (VII)
15.	Checks:	National: NDR 359, Zonal: PR 121 (Northern), CR Dhan 300 (Eastern and North Eastern), IR 64 (Central), Akshyadhan (Western), Jaya (Southern), Hybrid: HRI 174 & US 312 and Local.
16.	**ADVANCE VARIETY TRIAL 1- IRRIGATED MEDIUM (AVT 1-IM)**	
	2nd Year of testing	27705 (O,V, VI,VII), 27667 (II), 27691 (II), 27662 (II), 27661 (II), 27689 (III), 27712 (III,V), 27686 (VII), 27703 (VII) Repeats: 26819 (VII), 26847 (III), 26535 (V, VII), (R),_IHRT-MS : 27380 (III, V), 27383 (V), 27384 (III, V), 27385 (V), 27386 (V, VI), 27387 (III, V), 27389 (O), 27390 (III), 27393 (III), 27378 (V)
	Checks:	National: NDR 359, Zonal: PR 121 (Northern), CR Dhan 300 (Eastern and North Eastern), IR 64 (Central), Akshyadhan (Western), Jaya (Southern), Hybrid: HRI 174 & US 312 and Local.
17.	**INITIAL VARIETY TRIAL 1- IRRIGATED MEDIUM (IVT-IM)**	
	New nominations: Shift from IVT-IME 27749, 27771, 27776 Shift from IVT- E TP 27877, 27900	
	Checks:	National: NDR 359, Zonal: PR 121 (Northern), CR Dhan 300 (Eastern and North Eastern), Karma Mahsuri (Central), Akshyadhan (Western), Jaya (Southern) and Local.
18.	**ADVANCE VARIETY TRIAL 2- LATE (AVT 2-L)**	
	3rd year of testing:	26927 (VII), 26974 (VII)
	Checks:	National: Swarna, Zonal: NDR 8002 (Eastern), Ranjeet (North Eastern), Salivahana (Western), Pushyami (Southern), Hybrid: PA 6444 and Local Check.
19.	**ADVANCED VARIETY TRIAL 1- LATE (AVT 1-L)**	
	2nd year of testing:	27610 (III,VI), 27623 (VI), 27632 (VII), 27637 (V), 27640 (V,VI), 27641 (III, VI), 27646 (III), 27608 (VI), 27621 (VI), 27624 (VI),
	Checks:	National: Swarna, Zonal: NDR 8002 (Eastern), Ranjeet (North Eastern), Salivahana (Western), Pushyami (Southern), Hybrid: PA 6444 and Local Check.
20.	**INITIAL VARIETY TRIAL –LATE (IVT-L)**	
	New Nominations:	
	Checks:	National: Swarna, Zonal: NDR 8002 (Eastern), Ranjeet (North Eastern), Salivahana (Western), Pushyami (Southern), Hybrid: PA 6444 and Local.
21.	**ADVANCE VARIETY TRIAL 1-BORO (AVT1-BORO)**	
	3rd year of testing	26440 (O,IV), 26463 (O,III, IV), 26451, 26435
	2nd year of testing	27315 (O,IV), 27323 (O,III), 27326 (O,III)
	Checks:	National: IR 64, Zonal: Gautam, Hybrid: Rajalakshmi and Local.

Trial	Test Entries	
22.	**INITIAL VARIETY TRIAL-BORO (IVT-BORO)**	
	New nominations:	
	Checks:	National: IR 64, Zonal: Gautam, Hybrid: Rajalakshmi and Local Check.
23.	**ADVANCE VARIETY TRIAL 1–BASMATI (AVT1-BT)**	
	3rd year of testing	26999, 26995
	2nd year of testing	27723, 27728, 27732, 27733, 27734, 27720, 27722(NIL Disease Screening)
	Checks:	Pusa Basmati -1(Yield), Pusa Basmati 1121 (Yield and Quality), Taroari Basmati (Quality), Pusa RH 10(Hybrid) and Local.
24.	**INITIAL VARIETY TRIAL –BASMATI (IVT-BT)**	
	New Nominations:	
	Checks:	Pusa Basmati -1(Yield), Pusa Basmati 1121 (Yield and Quality), Taroari Basmati (Quality), Pusa RH 10(Hybrid) and Local.
25.	**INITIAL VARIETY TRIAL –AROMATIC SHORT GRAIN (IVT-ASG)**	
	3rd year of testing	None
	2nd year of testing	27801 (III,VI)
	New Nominations:	
	Checks:	National: Shobini, Zonal: Badshabhog, CR Sugandh Dhan 907 & Sugandhsamba, Quality: Dubraj & Ketekejoha and Local.
26.	**ADVANCE VARIETY TRIAL 1- ALKALINE AND INLAND SALINE TOLERANT VARIETY TRIAL (AVT 1-AL&ISTVT)**	
	3rd year of testing:	27077 (VII)
	2nd year of testing	27804 (O,II), 27823 (O), 27807 (II), 27809 (VII), 27094 (R) ()
	Checks:	CSR 36 (Alkaline), CSR 23 (Inland saline), CSR 10 (Early duration saline check), FL 478 (Saline tolerant), Pusa 44 (Sensitive check) and Local check.
27.	**INITIAL VARIETY TRIAL - ALKALINE AND INLAND SALINE TOLERANT VARIETY TRIAL (IVT- AL&ISTVT)**	
	New Nominations:	
	Checks:	CSR 36 (Alkaline), CSR 23 (Inland saline), CSR 10 (Early duration saline check), FL 478 (Saline tolerant), Pusa 44 (Sensitive check) and Local check.
28.	**ADVANCE VARIETY TRIAL1- COASTAL SALINE TOLERANT VARIETY TRIAL (AVT 1-CSTVT)**	
	3rd year of testing:	27037 (VI)
	2nd year of testing:	27826 (O), 27829 (III), 27833 (O), 27834 (O), 27835 (O), 27836 (O,III), 27838 (O), 27847 (VII), 27851 (O,III), 27852 (O,III), 27051 (R)(O)
	Checks:	Bhuthnath and FL 478 with Saltol 1 (Coastal saline checks), CSR 10 (Early saline tolerant check), Pusa 44 (Sensitive Check) and Local Check
29.	**INITIAL VARIETY TRIAL - COASTAL SALINE TOLERANT VARIETY TRIAL (IVT-CSTVT)**	
	New Nominations:	
	Checks:	Bhuthnath and FL 478 with Saltol 1 (Coastal saline checks), CSR 10 (Early saline tolerant check), Pusa 44(Sensitive Check) and Local Check

Trial	Test Entries	
30.	**ADVANCE VARIETY TRIAL 2- IRRIGATED EARLY HILLS (AVT 2-E H)**	
	3rd year of testing:	26565, 26576
	Checks:	National: Vivekdhan 86, Zonal: Shalimar Rice 3 and Local Check
31.	**ADVANCE VARIETY TRIAL 1- IRRIGATED EARLY HILLS (AVT 1-E H)**	
	2nd year of testing:	27461, 27462, 27463, 27464, 27465, 27466, 27467, 27468, 27471, 27472, 27474, 27476
	Checks:	National: Vivekdhan 86, Zonal: Shalimar Rice 3 and Local Check
32.	**INITIAL VARIETY TRIAL - IRRIGATED EARLY HILLS (IVT 1-E H)**	
	1st year of testing: New Nominations:	
	Checks:	National: Vivekdhan 86, Zonal: Shalimar Rice 3 and Local Check
33.	**ADVANCE VARIETY TRIAL 2- IRRIGATED MEDIUM HILLS (AVT 2-M H)**	
	3rd year of testing:	26579, 26580, 26588, 26591, 26594, 26596, 26597
	Checks:	National: Vivekdhan 62, Zonal: VL Dhan 65 (North & South), RC Maniphou 11 (North East) and Local Check
34.	**ADVANCE VARIETY TRIAL 1- IRRIGATED MEDIUM HILLS (AVT 1-M H)**	
	2nd year of testing:	27479, 27483, 27485, 27486, 27488, 27491, 27494, 27496
	Checks:	National: Vivekdhan 62, Zonal: VL Dhan 65 (North & South), RC Maniphou 11 (North East) and Local Check
35.	**INITIAL VARIETY TRIAL – IRRIGATED MEDIUM HILLS (IVT 1-M H)**	
	1st year of testing:	
	Checks:	National: Vivekdhan 62, Zonal: VL Dhan 65 (North & South), RC Maniphou 11 (North East) and Local Check
36.	**ADVANCE VARIETY TRIAL 1– UPLAND HILLS (AVT 1-U H)**	
	3rd year of testing:	26605
	2nd year of testing:	27498, 27503, 27504, 27505, 27501, 27506,
	Checks:	National: Sukaradhan 1, Zonal: Vivekdhan 154 (Northern and Southern), Bhalum 1 (North East) and Local Check
37.	**INITIAL VARIETY TRIAL – UPLAND HILLS (IVT-U H)**	
	1st year of testing:	
	Checks:	National: Sukaradhan 1, Zonal: Vivekdhan 154 (Northern and Southern), Bhalum 1 (North East) and Local Check
38.	**INITIAL VARIETY TRIAL – LAND RACES (IVT-LR(H))**	
	2nd year of testing:	28041, 28042
	Checks:	National: Sukaradhan 1, Zonal: Vivekdhan 154 (Northern and Southern), Bhalum 1 (North East) and Local Check
39.	**ADVANCE VARIETY TRIAL 2- AEROBIC (AVT 2-AEROB)**	
	3rd year of testing:	26171 (R), 26194 (R), 26198 (III)(R)
	Checks:	National: CR Dhan 201, Zonal: CR Dhan 202 (Northern and Eastern), AAUDR-1 (Western), MAS 946-1 (Southern), Hybrid: PA 6129 and Local Check.
33.	**ADVANCE VARIETY TRIAL 1-AEROBIC (AVT 1-AEROB)**	
	2nd year of testing:	27926 (II), 27927 (II), 27929 (II), 27936 (VI), 27937 (O, II, IV), 27938 (IV), 27939 (II), 27940 (II), 27942 (IV), 27943 (IV, VI), 27944 (IV), 27948 (II), 27949 (II), 27950 (II), 27951 (II, IV), 27952 (II), 27954 (II), 27956 (II), 27958 (II, IV), 27961 (III), 27962 (II), 27963 (II), 27966 (II, IV), 27967 (VI), 27968 (II), 27971 (II), 27973 (II, IV), 27977 (II), 27978 (II), 27980 (II,IV), 27981 (II)

Trial	Test Entries	
	Checks:	National: CR Dhan 201, Zonal: CR Dhan 202 (Northern and Eastern), AAUDR-1 (Western), MAS 946-1 (Southern), Hybrid: PA 6129 and Local Check.
34.	**INITIAL VARIETY TRIAL –AEROBIC (IVT-AEROB)**	
	New Nominations:	
	Checks:	National: CR Dhan 201, Zonal: CR Dhan 202 (Northern and Eastern), AAUDR-1 (Western), MAS 946-1 (Southern), Hybrid: PA 6129 and Local Check.
35.	**ADVANCE VARIETY TRIAL 2- BIOFORTIFICATION (AVT 2-BIOFORT)**	
	3rd year of testing:	27179 (II, VI)
	Checks:	Yield Checks: BPT 5204 & IR 64, Micronutrient Checks: Kalanamak & Chittimuthyalu, Hybrid: DRR H3.
36.	**ADVANCE VARIETY TRIAL 1-BIOFORTIFICATION (AVT 1-BIOFORT)**	
	2nd year of testing:	27984 (V)
	Checks:	Yield Checks: BPT 5204 & IR 64, Micronutrient Checks: Kalanamak & Chittimuthyalu, Hybrid: DRR H3.
37.	**INITIAL VARIETY TRIAL –BIOFORTIFICATION (IVT-BIOFORT)**	
	New Nominations: 28005 (R)	
	Checks:	Yield Checks: BPT 5204 & IR 64, Micronutrient Checks: DRR Dhan 45/DRR Dhan 49 & Chittimuthyalu, Hybrid: DRR H3.
38.	**ADVANCE VARIETY TRIAL 2-MEDIUM SLENDER GRAIN (AVT 2-MS)**	
	3rd year of testing:	25802 (R) (IV, VI), 26549 (II, V, VII), 27136 (IV, V), 27117 (V), 27118 (V)
	Checks:	National: WGL 14 & BPT 5204, Zonal: Improved Samba Mahsuri (Eastern and Central), Ketekejoha (North East), Karjat-6 (Western), ADT 49 (Southern), Samba Mahsuri, Improved Samba Mahsuri, DRRH 3 (Hybrid) and Local Check
39.	**ADVANCE VARIETY TRIAL 1-MEDIUM SLENDER GRAIN (AVT 1-MS)**	
	2nd year of testing	27460 (III), 27438 (III, VII), IHRT-MS : 27394 (IV), 27395 (IV), 27397 (O), 27401 (IV, VI), 27403 (IV, VI)
	Checks:	National: WGL 14 & BPT 5204, Zonal: Improved Samba Mahsuri (Eastern and Central), Ketekejoha (North East), Karjat-6 (Western), ADT 49 (Southern),JKRH 3333, 27 P 63 (Hybrid) and Local Check
40.	**INITIAL VARIETY TRIAL –MEDIUM SLENDER GRAIN (IVT-MS)**	
	New Nominations:	
	Checks:	National: WGL 14 & BPT 5204, Zonal: Improved Samba Mahsuri (Eastern and Central), Ketekejoha (North East), Karjat-6 (Western), ADT 49 (Southern) and Local Check
41.	**ADVANCE VARIETY TRIAL 2-NEAR ISOGENIC- BLAST (AVT 2-NIL-BL, BLB)**	
	2nd year of testing:	27280, 27285, 27294, 27286, 28014
42.	**ADVANCE VARIETY TRIAL 1-NEAR ISOGENIC- BLAST (AVT 1-NIL-BL, BLB)**	
	1st year of testing:	Repeat of the entries that were dropped only due to disease susceptibility (revised disease screening protocol)
43.	**ADVANCE VARIETY TRIAL 2-NEAR ISOGENIC- DROUGHT (AVT 2-NIL-DRT)**	
	2nd year of testing:	None
44.	**ADVANCE VARIETY TRIAL 1-NEAR ISOGENIC- DROUGHT (AVT 1-NIL-DRT)**	
	1st year of testing:	Repeat of the entries that were dropped only due to sensitivity due to drought stress (revised drought screening protocol based on

Trial	Test Entries	
		duration: two groups – 1) early/mid-early and 2) medium/late
45.	**ADVANCE VARIETY TRIAL 2-NEAR ISOGENIC- SUBMERGENCE (AVT 2-NIL-SUB)**	
	2nd year of testing:	26744
46.	**ADVANCE VARIETY TRIAL 1-NEAR ISOGENIC- SUBMERGENCE (AVT 1-NIL-SUB)**	
	1st year of testing:	Repeat: 28024
47.	**ADVANCE VARIETY TRIAL 2-NEAR ISOGENIC- COASTAL SALINITY (AVT 2-NIL-CS)**	
	2nd year of testing:	None
48.	**ADVANCE VARIETY TRIAL 1-NEAR ISOGENIC- COASTAL SALINITY (AVT 1-NIL-CS)**	
	1st year of testing:	Repeat of all the entries.
49.	**ADVANCE VARIETY TRIAL 1- LOW PHOSPHORUS TOLERANCE TRIAL**	
	2nd year of testing:	27641 (O,VII), 28059 (O,II), 28060 (II), 28061 (VII), 28064 (II, VII), 28066 (O,II, VII), 28070 (O,VII), 28072 (O,II,VII), 28077 (II), 28078 (II),
	Checks:	
50.	**INITIAL VARIETY TRIAL- LOW PHOSPHORUS TOLERANCE TRIAL**	
	New Nominations:	
	Checks:	
51.	**ADVANCE VARIETY TRIAL 1- LOW NITROGEN TOLERANCE TRIAL**	
	2nd year of testing:	27730, 28081, 28083, 28084, 28086, 28087, 28088
	Checks:	
52.	**INITIAL VARIETY TRIAL- LOW NITROGEN TOLERANCE TRIAL**	
	New Nominations:	
	Checks:	

Appendix 16

Entries for Agronomic Evaluation Kharif 2019

S No.	IET No.	Designation	Cross combination	GT	Trial name 2018 (Breeding)	Trial name in 2019 (Agronomy)
1.	26692	***MEPH-144 (Hybrid)***	-	SB	AVT 1-RSL	AVT 2-RSL
2.	25912	CR 2667-5-1-2-1-1	Gayatri / AC.38599	SB	AVT 1-SDW	AVT 2-SDW
3.	26767	RCPR 46-IR 93827-29-1-1-2	IR 81039-B-173-U 3-3 / IR 81063-B-94-U 3-1	LS	AVT 1-E TP	AVT 2-E TP
4.	26771	NVSR 2103	Gurjari / PAU 201	LB	AVT 1-E TP	AVT 2-E TP
5.	26803	RP 6221-HHZ 8-SAL9-DT2-Y2	Huang-Hua-Zhan*2 / Phalguna	MS	AVT 1-E TP	AVT 2-E TP
6.	26477	***RH-150025 (Hybrid)***	-	SB	AVT 1-E TP	AVT 2-E TP
7.	26468	***JKRH-2354 (Hybrid)***	-	LB	AVT 1-E TP	AVT 2-E TP
8.	24967	***Bio-680 (Hybrid)***	-	LB	AVT 2-IME	AVT 2-IME
9.	26118	MTU 1216 (MTU 2347-55-1-1)	MTU 1075 / MTU 1081	SS	AVT 1-IM	AVT 2-IM
10.	26086	OR (T) -31	Lalat Mutant	SB	AVT 1-IM	AVT 2-IM
11.	26927	BPT 2678	(MTU 7029 / Moroberakan) / MTU 7029	MS	AVT 1-L	AVT 2-L
12.	26974	MTU 1265	MTU 1075 / MTU 7029	MS	AVT 1-L	AVT 2-L
13.	26463	CR 3511-18-1-1-2-1-1	IR 36 / Surendra	SB	IVT-Boro	AVT1-Boro
14.	26440	TRC 2016-18	TRC 87-251 / Samba Mahsuri	SS	IVT-Boro	AVT 1-Boro
15.	26995	Pusa 1692-10-20-1-1-1	PB 1509 / P1601	LS	IVT-BT	AVT 1-BT
16.	26999	***Indam 100-012 (Hybrid)***	-	LS	IVT-BT	AVT 1-BT
17.	27077	RNR 11718	MTU 1010 / NLR 34449	MS	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
18.	27037	OR (CZ)-9-1	CST 7-1 Mutant	SB	AVT 1-CSTVT	AVT 2-CSTVT
19.	26565	HPR 2870	HPR 2143 / AC 19146 // VL 30424	LS	AVT 1-E (H)	AVT 2-E (H)
20.	26576	SKAU 500 (K 1356-6-4)	SR-1 / Dular	SB	AVT 1-E (H)	AVT 2-E (H)
21.	26579	HPR 2922	HPU 741 / HPR 1149	LS	AVT 1-M (H)	AVT 2-M (H)
22.	26597	UPR 3991-32-2-1-1	Pant Dhan 19 / UPRI 2008-16	LB	AVT 1-M (H)	AVT 2-M (H)
23.	26580	VL 32131	VL 10689 / UPRI 2005-15	LS	AVT 1-M (H)	AVT 2-M (H)
24.	26588	VL 40387	VL 31634 / Pusa Basmati 1	LS	AVT 1-M (H)	AVT 2-M (H)
25.	26596	VL 32130	VL 10689 / UPRI 2005-15	SB	AVT 1-M (H)	AVT 2-M (H)
26.	26594	HPR 2929	Kalizini / HPR 2143 // HPR 2143	LS	AVT 1-M (H)	AVT 2-M (H)
27.	26591	SKAU 502 (K 08-24-11)	SR-1 / VL Dhan 209	SB	AVT 1-M (H)	AVT 2-M (H)
28.	26605	VL 20073	VL 6394 / VL 122	SB	IVT- U (H)	AVT 1-U (H)
29.	27179	CR 2826-1-1-2-4B-2-1	Swarna / ARC 10075	SB	AVT 1-Biofort	AVT 2-Biofort

S No.	IET No.	Designation	Cross combination	GT	Trial name 2018 (Breeding)	Trial name in 2019 (Agronomy)
30.	26171	RP 5601-283-14-4-1	BPT 5204 / Azucena	SB	AVT 2-Aerob	AVT 2-Aerob
31.	26194	RP 5591-123-16-2	MTU 1010 / IR 79915-B-83-4-3	LB	AVT 2-Aerob	AVT 2-Aerob
32.	26549	***PHI-17108 (Hybrid)***	-	MS	AVT 1-MS	AVT 2-MS
33.	27136	CR 3783-3-2-1-1-1-1	Surendra / Abhaya	MS	AVT 1-MS	AVT 2-MS
34.	27118	MTU 1263	CMS 42B / IR 68897B	MS	AVT 1-MS	AVT 2-MS
35.	27117	ORJ 1135	RR 615 Mutant	MS	AVT 1-MS	AVT 2-MS
36.	25802	***ARRH-7576 (Hybrid)***	-	MS	AVT 2-MS	AVT 2-MS
37.	27285	RP 6280 Patho-9-12-9	Swarna *3 / C 101 LAC / C 101A51	MS	AVT 1-NIL Bl, BLB	AVT 2-NIL Bl, BLB
38.	27294	RP 6113-Patho BB-9(GSY-BB-IPB-2-9)	Improved Samba Mahsuri / PAU 3554	SS	AVT 1-NIL Bl, BLB	AVT 2-NIL Bl, BLB
39.	27280	RP 5989-47-15-11-1-126-2-13-11	Akshyadhan /// FBRI-15	LB	AVT 1-NIL Bl, BLB	AVT 2-NIL Bl, BLB
40.	26744	CR 3932-7	Pooja*3 / Swarna-Sub1	SB	AVT 1-NIL Sub	AVT 2-NIL Sub
41.	25798	***TMRH-124 (Hybrid)***	-	MS	AVT 2-MS	-
42.	24914	***JKRH-2154 (Hybrid)***	-	LB	AVT 1-E TP	-
43.	24950	***JKRH-2230 (Hybrid)***	-	LB	AVT 2-IME	-
44.	25745	***PHI 16101(*Hybrid*)***	-	LB	AVT 2-IME	-
45.	24990	***MR 8666 (Hybrid)***	-	MS	AVT 2- MS	

Appendix 17

Allocation of Breeder seed for Production during Kharif 2019 (as per DAC indent) for supply during Kharif 2020

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
1	Abhishek (IET-17868) (RR-272-829)	JH	4.67		
		NSC	0.10		
		Total	**4.77**	**CRURRS, Hazaribhag**	**5.00**
2	ADT-37	AP	12.00		
		SAI	1.50		
		Total	**13.50**	**TNRRI, Aduthuari**	**13.50**
3	ADT-39	AP	5.00		
		Total	**5.00**	**TNRRI, Aduthuari**	**5.00**
4	ADT-43(IET 14878)	NSC	0.10		
		Total	**0.10**	**TNRRI, Aduthuari**	**0.10**
5	Ajit	SAI	0.70		
		WB	4.00		
		Total	**4.70**	**RRS, Chinsurah**	**4.70**
6	Akshaya	AP	1.00		
		Total	**1.00**	**ANGRAU, Guntur**	**1.00**
7	Amara (MTU-1064)	AP	7.00		
		NSC	0.50		
		Total	**7.50**	**ANGRAU, Guntur**	**7.50**
8	Anjali (IET-16430,RR-347-166)	JH	2.34		
		SAI	0.20		
		WB	0.50		
		Total	**3.04**	**CRURRS, Hazaribhag**	**3.04**
9	Ankit (CR 2702)(IET 21627)	OR	2.10		
		Total	**2.10**	**NRRI, Cuttack**	**2.10**
10	Annada	SAI	8.70		
		WB	1.50		
		Total	**10.20**	**NRRI, Cuttack**	**10.20**
11	ASD 16	SAI	1.50		
		Total	**1.50**	**TNAU, Coimbatore**	**1.50**
12	Athira (PBT 51)	NSC	0.40		
		Total	**0.40**	**RARS, Pattambi**	**0.40**
13	Badshah Selection-1	CG	3.60		
		Total	**3.60**	**IGKV, Raipur**	**3.60**
14	Bahadur Sub-1	AS	40.00		
		SAI	0.45		
		Total	**40.45**	**AAU, Titabar**	**40.45**
15	Bamleshwari (IET.14444, R 738-1-64-2-2)	CG	12.00		
		Total	**12.00**	**IGKV, Raipur**	**12.00**
16	Kasturi (IET-8580)	HP	4.20		
		Total	**4.20**	**RWRC, Malan**	**4.20**
17	BasmatI-370	JK	2.50		
		SAI	0.80		
		Total	**2.58**	**Kaul**	**2.58**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
18	BB-11	SAI	2.30		
		Total	2.30		2.30
19	Bhadra (MO-4)	KK	3.50		
		Total	**3.50**	**RRS, Moncompu**	**3.50**
20	Bharani (NLR 30491)	AP	7.00		
		Total	**7.00**	**ANGRAU, Guntur**	**7.00**
21	Bhogavati	MH	0.60		
		Total	**0.60**	**ARS, Radhanagari**	**0.60**
22	Bhuvan (IET 7804)	SAI	0.60		
		Total	**0.60**	**OUAT, Odisha**	**0.60**
23	Bina dhan-10	NSC	0.05		
		SAI	0.30		
		Total	**0.35**	**IIRR, Rajendranagar**	**0.35**
24	Bina dhan-11	NAFED	3.00		
		OR	4.20		
		SAI	2.10		
		Total	**9.30**	**IIRR, Rajendranagar**	**9.30**
25	Bina dhan-12	SAI	0.90		
		Total	**0.90**	**IIRR, Rajendranagar**	**0.90**
26	Bina dhan-17	NSC	0.20		
		Total	**0.20**	**IIRR, Rajendranagar**	**0.20**
27	Birsa Vikas dhan-109	JH	4.68		
		Total	**4.68**	**BAU, Ranchi**	**4.68**
28	Birsa Vikas dhan-110	JH	2.34		
		Total	**2.34**	**BAU, Ranchi**	**2.34**
29	Birsamati	JH	2.34		
		Total	**2.34**	**BAU, Ranchi**	**2.34**
30	BNKR-1 (DHIREN)IET 20760	SAI	0.90		
		WB	3.00		
		Total	**3.90**	**RRS, Bankura**	**3.90**
31	BPT-5204	AP	8.00		
		KK	2.70		
		NSC	2.00		
		SAI	6.28		
		TG	20.00		
		Total	**38.98**	**ANGRAU, Guntur**	**38.98**
32	BPT-3291 (Sona masuri)	AP	5.00		
		Total	**5.00**	**ANGRAU, Guntur**	**5.00**
33	BR-2655	KK	1.50		
		NSC	0.20		
		Total	**1.70**	**UAS, Bangalore**	**1.70**
34	BRRI Dhan-69	NSC	0.20		
		Total	**0.20**	**IIRR, Rajendranagar**	**0.20**
35	BRRI Dhan-75	NSC	0.20		
		Total	**0.20**	**IIRR, Rajendranagar**	**0.20**
36	CGZR-1	CG	5.00		
		Total	**5.00**	**IGKV, Raipur**	**5.00**
37	Chandra (IET 23409)(MTU-1153)	AP	2.00		
		MP	4.50		
		MH	0.50		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		SAI	7.50		
		WB	3.00		
		Total	**17.50**	**ANGRAU, Guntur**	**17.50**
38	Chandrahasini (IET-16800)	CG	20.00		
		Total	**20.00**	**IGKV, Raipur**	**20.00**
39	Chandrama	AS	20.00		
		Total	**20.00**	**Gerua, Assam**	**20.00**
40	Chenab (SKAU-23)	JK	1.00		
		Total	**1.00**	**RRS, Khudwani**	**1.00**
41	Chinsurah Rice (IET 19140) (CNI 383-5-11)	WB	1.00		
		Total	**1.00**	**RRS, Chinsurah**	**1.00**
42	Cherang Sub-1	NSC	0.50		
		SAI	1.80		
		WB	6.00		
		Total	**8.30**	**IIRR, Rajendranagar**	**8.30**
43	CN 1272-55-105 (IET 19886)	WB	0.50		
		Total	**0.50**	**RRS, Chinsurah**	**0.50**
44	CNR-2 (IET 20235)	MP	2.50		
		Total	**2.50**	**RRS, Chinsurah**	**2.50**
45	CO-51	MP	16.50		
		MH	3.00		
		OR	5.00		
		TG	1.20		
		TP	0.20		
		UP	5.00		
		WB	1.50		
		Total	**32.40**	**TNAU, Coimbatore**	**32.40**
46	Cottondora sannalu (MTU-1010)	CG	173.00		
		JH	11.68		
		KK	5.60		
		IFFDC	2.00		
		MP	67.00		
		MH	10.00		
		NSC	2.00		
		OR	20.00		
		SAI	25.15		
		TG	25.20		
		TP	0.10		
		WB	10.00		
		Total	**351.73**	**ANGRAU, Guntur**	**351.73**
47	CR-204	NAFED	3.00		
		Total	**3.00**	**NRRI, Cuttack**	**3.00**
48	CR-205	NAFED	3.00		
		Total	**3.00**	**NRRI, Cuttack**	**3.00**
49	CR-206	NAFED	3.00		
		Total	**3.00**	**NRRI, Cuttack**	**3.00**
50	CR-311	NAFED	3.00		
		Total	**3.00**	**NRRI, Cuttack**	**3.00**
51	CR Boro dhan-2 (IET 17612)	SAI	0.30		
		Total	**0.30**	**NRRI, Cuttack**	**0.30**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
52	CR Dhan-201 (IET 21924)	WB	1.00		
		Total	**1.00**	**NRRI, Cuttack**	**1.00**
53	CR Dhan-300 (IET 19816) (CR 2301-1)	OR	2.10		
		WB	0.50		
		Total	**2.60**	**NRRI, Cuttack**	**2.60**
54	CR Dhan-304 (IET 22117)	OR	2.10		
		Total	**2.10**	**NRRI, Cuttack**	**2.10**
55	CR Dhan-305 (IET 21287)	MH	0.30		
		SAI	0.30		
		WB	1.00		
		Total	**1.60**	**NRRI, Cuttack**	**1.60**
56	CR Dhan-401 (Reeta) (IET 19969)	WB	1.50		
		Total	**1.50**	**NRRI, Cuttack**	**1.50**
57	CR Dhan-505 (IET 21719)	AS	25.00		
		OR	1.50		
		Total	**26.50**	**NRRI, Cuttack**	**26.50**
58	CR Dhan-601 (IET 18558)	AS	20.00		
		OR	2.10		
		WB	1.00		
		Total	**23.10**	**NRRI, Cuttack**	**23.10**
59	CR Dhan-10 (IET 18312)	WB	1.00		
		Total	**1.00**	**NRRI, Cuttack**	**1.00**
60	CR Dhan-203	OR	5.00		
		SAI	0.50		
		WB	4.00		
		TOTAL	**9.50**	**NRRI, Cuttack**	**9.50**
61	CR Dhan-209	WB	1.00		
		Total	**1.00**	**NRRI, Cuttack**	**1.00**
62	CR Dhan-301	MP	1.70		
		Total	**1.70**	**NRRI, Cuttack**	**1.70**
63	CR Dhan-303	MP	14.50		
		Total	**14.50**	**NRRI, Cuttack**	**14.50**
64	CR Dhan-307 (MAUDAMI) (CR 2599)	OR	5.00		
		Total	**5.00**	**NRRI, Cuttack**	**5.00**
65	CR Dhan-310	AS	35.00		
		JH	7.00		
		OR	2.10		
		Total	**44.10**	**NRRI, Cuttack**	**44.10**
66	CR Dhan-405	WB	1.00		
		Total	**1.00**	**NRRI, Cuttack**	**1.00**
67	CR DHAN-501	AS	20.00		
		Total	**20.00**	**NRRI, Cuttack**	**20.00**
68	CR Dhan-800	NSC	0.30		
		SAI	1.60		
		Total	**1.90**	**NRRI, Cuttack**	**1.90**
69	CR Dhan-801	NSC	0.30		
		TG	1.20		
		Total	**1.50**	**NRRI, Cuttack**	**1.50**
70	CR Sugandh Dhan-907 (IET 21044)	MP	3.40		
		Total	**3.40**	**NRRI, Cuttack**	**3.40**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
71	CR 1009 Sub- 1	NAFED	3.00		
		NSC	0.20		
		OR	3.00		
		WB	3.00		
		Total	**9.20**	**NRRI, Cuttack**	**9.20**
72	CR -1014	SAI	0.30		
		Total	**0.30**	**NRRI, Cuttack**	**0.30**
73	CR -1017	SAI	1.90		
		Total	**1.90**	**NRRI, Cuttack**	**1.90**
74	CSR-30	HR	0.08		
		SAI	5.94		
		Total	**6.02**	**CSSRI Karnal**	**6.02**
75	CSR-36	BI	3.00		
		WB	0.50		
		Total	**3.50**	**CSSRI, Karnal**	**3.50**
76	CSR-43	UP	2.00		
		WB	1.00		
		Total	**3.00**	**CSSRI, Karnal**	**3.00**
77	CSR-46	UP	2.00		
		Total	**2.00**	**CSSRI, Karnal**	**2.00**
78	CSR-56	UP	2.00		
		Total	**2.00**	**CSSRI, Karnal**	**2.00**
79	Danteshwari (IET 15450,R 302-111)	CG	5.00		
		MP	4.00		
		Total	**9.00**	**IGKV, Raipur**	**9.00**
80	DRR Dhan-50 (IET 25671) (Drt Tolerent)	AP	0.10		
		MP	12.50		
		NSC	0.50		
		TG	1.20		
		TN	1.00		
		Total	**15.30**	**IIRR, Rajendranagar**	**15.30**
81	DRR Dhan-45	NSC	0.20		
		SAI	1.00		
		TN	1.50		
		TP	0.05		
		UP	1.20		
		WB	2.00		
		Total	**5.95**	**IIRR, Rajendranagar**	**5.95**
82	DRR Dhan-39	OR	5.00		
		Total	**5.00**	**IIRR, Rajendranagar**	**5.00**
83	DRR Dhan-43	OR	1.00		
		SAI	0.40		
		WB	0.50		
		Total	**1.90**	**IIRR, Rajendranagar**	**1.90**
84	DRR Dhan-44	BI	10.00		
		CG	10.00		
		MP	1.70		
		NAFED	5.00		
		NSC	0.50		
		OR	4.20		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		SAI	3.00		
		WB	2.00		
		Total	**36.40**	**IIRR, Rajendranagar**	**36.40**
85	DRR Dhan-46	BI	0.10		
		MH	1.00		
		OR	1.00		
		WB	1.00		
		Total	**3.10**	**IIRR, Rajendranagar**	**3.10**
86	DRR Dhan-51	NSC	0.50		
		Total	**0.50**	**IIRR, Rajendranagar**	**0.50**
87	Dubraj Section 1	CG	3.30		
		Total	**3.30**	**IGKV, Raipur**	**3.30**
88	Erra Mallelu (WGL- 20471)	SAI	4.40		
		WB	1.00		
		Total	**5.40**	**PJTSAU, Hyderabad**	**5.40**
89	Gayatri (IET -8022)	OR	1.20		
		SAI	0.90		
		Total	**2.10**	**NRRI, Cuttack**	**2.10**
90	Geetanjali (CRM-20007-1) (IET -17276)	WB	1.00		
		Total	**1.00**	**NRRI, Cuttack**	**1.00**
91	Gitesh (TTB 103-3-1)	AS	25.00		
		Total	**25.00**	**RARS, Titabar**	**25.00**
92	GIZA-14	JK	0.30		
		TOTAL	**0.30**	**Chatha, J & k**	**0.30**
93	Gontra Bidhan-1 (IET 17430)	NSC	0.20		
		OR	2.10		
		SAI	34.55		
		WB	8.00		
		Total	**44.85**	**BCKVV, Nadia**	**44.85**
94	Gontra Bidhan-4	SAI	0.30		
		Total	**0.30**	**BCKVV, Nadia**	**0.30**
95	Gontra Bidhan-3 (IET 22752)	NSC	0.15		
		SAI	12.90		
		WB	5.00		
		Total	**18.05**	**BCKVV, Nadia**	**18.05**
96	Govind	SAI	0.20		
		Total	**0.20**	**GBPAUT, Pantnagar**	**0.20**
97	GR- 13 (GAR -13)	NSC	0.10		
		Total	**0.10**	**GAU, Nawagam**	**0.10**
98	Gurjari	NSC	0.10		
		Total	**0.10**	**GAU, Nawagam**	**0.10**
99	Hazaridhan	JH	2.92		
		Total	**2.92**	**CRURRS, Hazaribhag**	**2.92**
100	HD-3181	SAI	1.00		
		Total	1.00		1.00
101	HKR-127 (HKR-95-222)	SAI	3.84		
		UK	0.60		
		Total	**4.44**	**ARS, Kaul**	**4.44**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
102	HKR-47	SAI	5.42		
		UK	0.30		
		Total	**5.72**	**ARS, Kaul**	**5.72**
103	HKR-48	SAI	0.50		
		Total	**0.50**	**RRS, Kaul**	**0.50**
104	HMT Sona (Not notified)	SAI	0.90		
		Total	**0.90**		
105	HPR-2143	HP	13.80		
		Total	**13.80**	**RWRS, Malan**	**13.80**
106	HPR-1156 (IET 16007)	HP	10.00		
		Total	**10.00**	**RWRS, Malan**	**10.00**
107	HPR-2612 (Palm Basmati 1)	HP	12.00		
		Total	**12.00**	**RWRS, Malan**	**12.00**
108	HUR-1304	UP	5.00		
		Total	**5.00**	**BHU, Varanasi**	**5.00**
109	HUR-1309	UP	5.00		
		Total	**5.00**	**BHU, Varanasi**	**5.00**
110	HUR- 917	NSC	0.15		
		Total	**0.15**	**BHU, Varanasi**	**0.15**
111	IET 5656 (Swarnadhan)	SAI	1.20		
		Total	**1.20**	**IIRR, Rajendranagar**	**1.20**
112	IGKVR- 1	CG	92.50		
		SAI	0.30		
		Total	**92.80**	**IGKV, Raipur**	**92.80**
113	IGKVR- 2(IET 19795)	CG	38.00		
		Total	**38.00**	**IGKV, Raipur**	**38.00**
114	IGRKVR -1244 (R1244-1246-1-605-1)	CG	40.00		
		Total	**40.00**	**IGKV, Raipur**	**40.00**
115	Improved Pusa Basmati -1(IET 18990) (Pusa 1460-01-32-6-7-67)	MP	2.50	Non GI area – no indent	
		SAI	0.70		
		Total	**3.20**	**IARI Regional Station Karnal**	**3.20**
116	Improved Chinnor	MP	2.75		
		Total	**2.75**	**JNKVV, jabalpur**	**2.75**
117	Improved Jeera Shankar	MP	2.75		
		Total	**2.75**	**JNKVV, jabalpur**	**2.75**
118	Improved Lalat	OR	10.00		
		SAI	0.20		
		WB	4.00		
		Total	**14.20**	**NRRI Cuttack**	**14.20**
119	Improved Samba Mahsuri	OR	10.00		
		SAI	0.30		
		WB	1.00		
		AP	1.00		
		CG	10.00		
		Total	**22.30**	**IIRR, Rajendranagar**	**22.30**
120	Indira Aerobic -1 (R 1570-2649-1-1546-1)	CG	15.00		
		Total	**15.00**	**IGKV, Raipur**	**15.00**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
121	Indira Barani dhan -1 (RF-17-38-70)	CG	25.00		
		Total	**25.00**	**IGKV, Raipur**	**25.00**
122	Indrayani (IET 12897)	MH	15.00		
		NSC	0.50		
		SAI	50.60		
		Total	**66.10**	**ARS, Vadagon**	**66.10**
123	Intan	KK	1.00		
		Total	**1.00**	**ARS, Mugad**	**1.00**
124	IR-36	MP	5.20		
		SAI	8.20		
		WB	3.00		
		Total	**16.40**	**IGKV, Raipur**	**16.40**
125	IR-64	CG	24.00		
		KK	12.70		
		IFFDC	1.00		
		MP	6.20		
		NSC	1.00		
		SAI	29.30		
		Total	**74.20**	**IGKV, Raipur**	**74.20**
126	IR-64 Drt 1 (IET 22836) (DRR Dhan-42)	BI	6.00		
		CG	54.00		
		JH	11.68	**CRURRS Hazaribagh**	**18.00**
		KK	1.00		
		MP	40.00		
		NAFED	5.00		
		NSC	2.00		
		OR	3.00		
		SAI	4.05		
		WB	6.00		
		TOTAL	**132.73**	**IIRR, Rajendranagar**	**115.00**
127	Jagjeevan (IET 19487) (RP 4631-46-6-5-1-1)	WB	1.00		
		Total	**1.00**	**IIRR, Rajendranagar**	**1.00**
128	Jaya	KK	4.80		
		MH	3.50		
		NSC	0.65		
		SAI	58.80		
		TG	1.20		
		Total	**68.95**	**IIRR, Rajendranagar**	**68.95**
129	JGL 11470 (Jagtial Mahsuri)	KK	0.60		
		Total	**0.60**	**PJTSAU, Hyderabad**	**0.60**
130	JGL -1798	KK	0.90		
		SAI	0.25		
		Total	**1.15**	**PJTSAU, Hyderabad**	**1.15**
131	JGL -18047(Bathukamma)	KK	0.60		
		TG	4.50		
		Total	**5.10**	**PJTSAU, Hyderabad**	**5.10**
132	JR 767	MP	16.50		
		Total	**16.50**	**JNKVV, Jabalpur**	**16.50**
133	JR -503(Richa)(IET- 16783)	MP	3.20		
		Total	**3.20**	**JNKVV, Jabalpur**	**3.20**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
134	JR- 81	MP	2.05		
		Total	**2.05**	**JNKVV, Jabalpur**	**2.05**
135	JRB -1	MP	2.05		
		Total	**2.05**	**JNKVV, Jabalpur**	**2.05**
136	Jyothi	AP	4.00		
		KK	4.50		
		NSC	4.00		
		SAI	0.60		
		TG	1.20		
		Total	**14.30**	**RRS, Pattambi**	**14.30**
137	Kalachampa	OR	10.00		
		TOTAL	**10.00**	**SSTL, BBSR, Govt Odisha**	**10.00**
138	Kalanamak (Not notified)	NSC	0.05		
		TOTAL	0.05	IIRR, Hyderabad	
139	Karjat-184	MH	0.50		
		TOTAL	**0.50**	**RARS, Karjat**	**0.50**
140	Karjat-3	MH	2.00		
		TOTAL	**2.00**	**RARS, Karjat**	**2.00**
141	Karjat-5	MH	0.60		
		TOTAL	**0.60**	**RARS, Karjat**	**0.60**
142	Karjat-7	MH	1.50		
		TOTAL	**1.50**	**RARS, Karjat**	**1.50**
143	Karjat-8	MH	0.50		
		TOTAL	**0.50**	**RARS, Karjat**	**0.50**
144	Karma mahsuri(IET 19991)	CG	15.00		
		TOTAL	**15.00**	**IGKV, Raipur**	**15.00**
145	Ketki joha	AS	25.00		
		TOTAL	**25.00**	**AAU, Titabar**	**25.00**
146	Khandagiri	OR	5.00		
		SAI	3.30		
		TOTAL	**8.30**	**OUAT, Bhubaneswar**	**8.30**
147	Khitish(IET -4094)	SAI	7.30		
		WB	3.00	**RRS, Chinsurah**	**3.00**
		TOTAL	**10.30**	**NRRI, Cuttack**	**7.30**
148	KHP- 11	KK	0.50		
		TOTAL	**0.50**	**UAS, Shivamoga**	**0.50**
149	KMD- 2 (Abhilash)	KK	1.25		
		TOTAL	**1.25**	**ARS, Mugad**	**1.25**
150	KNM-118	NSC	0.10		
		TG	30.00		
		TOTAL	**30.10**	**PJTSAU, Hyderabad**	**30.10**
151	Kranti (R-2022)	IFFDC	2.00		
		MP	5.30		
		SAI	3.10		
		TOTAL	**10.40**	**JNKVV, Jabalpur**	**10.40**
152	Krishna Hamsa	TP	0.05		
		TOTAL	**0.05**	**IIRR, Rajendranagar**	**0.05**
153	Lalat(IET- 9947)	JH	11.68		
		NSC	0.10		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		OR	10.00		
		SAI	19.20		
		WB	2.00		
		TOTAL	**42.98**	**OUAT, Bhubaneswar**	**42.98**
154	Luna Sankhi	OR	0.60		
		TOTAL	**0.60**	**NRRI, Cuttack**	**0.60**
155	Luna Sampad (IET 19470)	SAI	0.30		
		WB	1.00		
		TOTAL	**1.30**	**NRRI, Cuttack**	**1.30**
156	Luna Suwarna (IET 18697)	OR	0.60		
		WB	1.00		
		TOTAL	**1.60**	**NRRI, Cuttack**	**1.60**
157	Luni Sree	WB	0.50		
		Total	**0.50**	**NRRI, Cuttack**	**0.50**
158	Mahamaya(IET-10749)	CG	72.00		
		SAI	2.10		
		Total	**74.10**	**IGKV, Raipur**	**74.10**
159	Manaswini(IET19005)	OR	2.10		
		Total	**2.10**	**OUAT, Bhubaneswar**	**2.10**
160	Mandakini(OR2077-4)(IET17847)	OR	3.00		
		SAI	0.20		
		Total	**3.20**	**OUAT, Bhubaneswar**	**3.20**
161	Maruteru Sannalu(MTU-1006, IET-14348)	WB	1.00		
		Total	**1.00**	**ANGRAU, Guntur**	**1.00**
162	Mahsuri	SAI	1.10		
		Total	**1.10**	**IIRR, Rajendranagar**	**1.10**
163	MO21(Prathiksha)	KK	0.75		
		Total	**0.75**	**RRS, Moncompu**	**0.75**
164	Mrunalini(or 1898-18) (IET18649)	OR	5.00		
		Total	**5.00**	**OUAT, Bhubaneswar**	**5.00**
165	MTU-1075(IET18482)	AP	15.00		
		NSC	0.40		
		OR	5.00		
		SAI	1.70		
		TG	2.00		
		WB	1.00		
		Total	**25.10**	**ANGRAU, Guntur**	**25.10**
166	MTU-1061(Indra)	AP	7.00		
		TG	1.00		
		Total	**8.00**	**ANGRAU, Guntur**	**8.00**
167	MTU-1081 (Pre-release culture)	SAI	0.10		
		Total	**0.10**		
168	MTU-1121(Sri Dhruthi)	AP	10.00		
		NSC	0.10		
		SAI	100.50		
		WB	2.50		
		Total	**113.10**	**ANGRAU, Guntur**	**113.10**
169	MTU-1156	AP	10.00		
		MP	19.00		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		SAI	11.50		
		Total	**40.5**	**ANGRAU, Guntur**	**40.50**
170	MTU-1210 (Pre-release culture)	WB	1.00		
		Total	**1.00**		
171	MTU-7029 (Swarna)	AP	6.00		
		CG	150.00		
		JH	23.36		
		MH	2.00		
		NSC	1.00		
		OR	20.00		
		SAI	123.30		
		TP	0.50		
		UK	0.60		
		WB	22.00		
		Total	**348.76**	**ANGRAU, Guntur**	**348.76**
172	Narendradhan (NDR359)	SAI	5.52		
		Total	**5.52**	**NDUAT, Faizabad**	**5.52**
173	Narendradhan-97	SAI	0.80		
		TP	0.40		
		Total	**1.20**	**NDUAT, Faizabad**	**1.20**
174	Naveen(CR-749-20-2)(IET-14461)	JH	5.84		
		OR	1.20		
		SAI	0.30		
		TP	0.50		
		WB	1.00		
		Total	**8.84**	**NRRI, Cuttack**	**8.84**
175	NDR-2065(IET17476)	UP	20.00		
		Total	**20.00**	**NDUAT, Faizabad**	**20.00**
176	Nellore Mahsuri(NLR-34449)	AP	3.00		
		TG	9.00		
		Total	**12.00**	**ANGRAU, Guntur**	**12.00**
178	PA-2129	MP	20.50		
		Total	20.50		20.50
179	Pankaj	SAI	0.30		
		Total	**0.30**	**OUAT, Bhubaneshwar**	**0.30**
180	Pantdhan-18(IET-17920) (UPRI-99-1)	SAI	0.20		
		WB	1.00		
		Total	**1.20**	**GBPAUT, Pantnagar**	**1.20**
181	Pantdhan-10(IET-8616)	SAI	0.30		
		Total	**0.30**	**GBPAUT, Pantnagar**	**0.30**
182	Pantdhan-12(IET-10955)	SAI	3.10		
		Total	**3.10**	**GBPAUT, Pantnagar**	**3.10**
183	Pantdhan-24	UP	25.00		
		Total	**25.00**	**GBPAUT, Pantnagar**	**25.00**
184	Pantdhan-26	UK	0.30		
		Total	**0.30**	**GBPAUT, Pantnagar**	**0.30**
185	Pardhiva(NLR-33892)	AP	4.00		
		Total	**4.00**	**ANGRAU, Guntur**	**4.00**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
186	Parijat(IET-2684)	SAI	4.00		
		WB	1.00		
		Total	**5.00**	**OUAT, Bubaneswar**	**5.00**
187	PAU-201	SAI	6.50		
		Total	**6.50**	**PAU, Ludhiana**	**6.50**
188	PB-1609	~~SAI~~	~~3.16~~		
		Total	**3.16**	**IARI Regional Station Karnal**	**3.16**
189	PB-1718	HR	0.08		
		NSC	0.30		
		~~SAI~~	~~47.30~~		
		Total	**47.76**	**IARI Regional Station Karnal**	**47.76**
190	PB-1794	SAI	1.00		
		Total	**1.00**	**IARI Regional Station Karnal**	**1.00**
191	PB-1884	SAI	16.30		
		Total	**16.30**	**IARI Regional Station Karnal**	**16.30**
192	PDKV Tilak	MH	1.00		
		Total	**1.00**	**ARS Sindewahi**	**1.00**
193	Phalguni(IET-18720) (CRAC 2224-1041)	WB	0.50		
		Total	**0.50**	**NRRI, Cuttack**	**0.50**
194	Phule Samruddhi(VDN-99-29)	MH	0.50		
		Total	**0.50**	**ARS, Vadagon**	**0.50**
195	PKV HMT	CG	70.00		
		MH	1.00		
		SAI	0.90		
		TG	0.06		
		TOtal	**71.96**	**ARS, Sindewhi**	**71.96**
196	PDKV Kisan	MH	0.50		
		Total	**0.50**	**ARS, Sakoli**	**0.50**
197	Pooja(IET-12241)	OR	30.00		
		SAI	2.40		
		TP	0.10		
		Total	**32.50**	**NRRI, Cuttack**	**32.50**
198	Poorna Bhog	OR	0.30		
		Total	**0.30**	**NRRI, Cuttack**	**0.30**
199	Poornima (IET-12284,1281-PP-31-1)	CG	5.00		
		MP	5.40		
		Total	**10.40**	**IGKV, Raipur**	**10.40**
200	PR121	NFL	0.30		
		PB	0.40		
		SAI	28.80		
		UP	15.00		
		UK	0.60		
		Total	**45.12**	**PAU, Ludhiana**	**45.12**
201	PR 122(RYT3129)	PB	0.80		
		SAI	17.62		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		Total	**17.70**	**PAU, Ludhiana**	**17.70**
202	PR-111	SAI	6.68		
		Total	**6.68**	**PAU, Ludhiana**	**6.68**
203	PR-113	JK	0.50		
		PB	0.16		
		SAI	62.64		
		Total	**63.30**	**PAU, Ludhiana**	**63.30**
204	PR-114	HR	0.08		
		NSC	0.10		
		PB	0.40		
		SAI	17.23		
		Total	**17.81**	**PAU, Ludhiana**	**17.81**
205	PR-116	SAI	3.28		
		Total	**3.28**	**PAU, Ludhiana**	**3.28**
206	PR-118	SAI	10.94		
		Total	**10.94**	**PAU, Ludhiana**	**10.94**
207	PR-123	PB	0.04		
		SAI	1.16		
		Total	**1.20**	**PAU, Ludhiana**	**1.20**
208	PR-124	PB	0.04		
		SAI	7.72		
		Total	**7.76**	**PAU, Ludhiana**	**7.76**
209	PR-126	NSC	0.50		
		PB	0.40		
		SAI	24.48		
		Total	**25.18**	**PAU, Ludhiana**	**25.18**
210	PR-127	NSC	0.50		
		PB	0.20		
		SAI	17.43		
		Total	**18.03**	**PAU, Ludhiana**	**18.03**
211	PR-128	SAI	10.96		
		Total	**10.96**	**PAU, Ludhiana**	**10.96**
212	PR-129	SAI	3.70		
		Total	**3.70**	**PAU, Ludhiana**	**3.70**
213	PR-130	SAI	1.30		
		Total	**1.30**	**PAU, Ludhiana**	**1.30**
214	Prabhat	AP	2.00		
		Total	**2.00**	**ANGRAU, Guntur**	
215	Pratap-1(RSK-1901-10-1-1)	RJ	0.10		
		Total	**0.10**	**Kota**	**0.10**
216	Pratikshya(or S201-5) (IET-15191	NSC	0.20		
		OR	5.00		
		SAI	9.20		
		WB	18.00		
		Total	**32.40**	**OUAT, Bubaneswar**	**32.40**
217	PTB-45(Matta Triveni)	AP	1.00		
		Total	**1.00**	**RRS, Pattambi**	**1.00**
218	PTB-61(Supriya)	AP	1.00		
		Total	**1.00**	**RRS, Pattambi**	**1.00**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
219	Punjab Basmati -4	PB	0.04		
		Total	**0.04**	**PAU, Ludhiana**	**0.04**
220	Punjab Basmati -5	PB	0.04		
		Total	**0.04**	**PAU, Ludhiana**	**0.04**
221	PUSA 1592	HR	0.08		
		SAI	0.50		
		Total	**0.58**	**IARI, New Delhi**	**0.58**
223	PUSA-6(IET22290) (PUSA1612-7-6-5)	SAI	0.60		
		Total	**0.60**	**IARI, New Delhi**	**0.60**
224	PUSA Basmati 1121	HR	0.08		
		NSC	0.20		
		PB	0.32		
		SAI	91.66		
		UP	5.00	**BEDF, New Delhi**	**15.00**
		Total	**97.26**	**IARI Regional Station Karnal**	**45.0**
225	PUSA Basmati 1637(IET24570)	HR	0.08		
		NSC	0.20		
		PB	0.08		
		SAI	44.10		
		UP	5.00		
		Total	**49.46**		
226	PUSA BASMATI -1728	HR	0.08		
		NSC	0.50		
		SAI	42.34		
		UP	3.00		
		Total	**45.92**		
227	PUSA BASMATI -1(IET-10364)	HR	0.08		
		SAI	24.21		
		UP	5.00	**BEDF, New Delhi**	**10**
		Total	**29.29**	**IARI Regional Station Karnal**	**19.29**
228	PUSA Basmati-1509(IET-21960)	HR	0.08		
		NSC	1.00		
		PB	0.08		
		SAI	102.25		
		UP	31.00		
		UK	0.50	**BEDF, New Delhi**	**20**
		Total	**134.91**	**IARI Regional Station Karnal**	**40**
229	PUSA Basmati-6(IET-18005)	SAI	21.13		
		Total	**21.13**	**IARI Regional Station Karnal**	**21.13**
230	PUSA Sugandh-2 (IET-16310,PUSA-204-1-126)	SAI	0.40		
		Total	**0.40**	**IARI , Delhi**	**0.40**
231	PUSA Sugandh-3 (IET-16313,PUSA-2504-1-3-1)	MP	20.50		
		Total	**20.50**	**IARI , Delhi**	**20.50**
232	PUSA Sugandh-5(IET-17021)	MP	41.20		
		SAI	24.51		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
		WB	1.00		
		Total	**66.71**	**IARI, New Delhi**	**66.71**
233	PUSA-1790	SAI	1.00		
		Total	**1.00**		
234	PUSA-44	HR	0.08		
		SAI	132.94		
		Total	**133.02**	**IARI Reg. Station (based on actual requirement)**	**40**
235	~~PUSA-50~~ PUSA SAMBA (PUSA 1850)	SAI	2.00		
		Total	**2.00**	**IARI Regional Station Karnal**	**2.00**
236	PUSPA(IET-17509)	SAI	0.70		
		WB	1.00		
		Total	**1.70**	**RRS, Bankura**	**1.70**
237	Rajendra Bhagavati	BI	53.00		
		NSC	0.10		
		SAI	0.90		
		UK	0.30		
		WB	7.00		
		Total	**62.30**	**RAU, PUSA**	**62.30**
238	Rajendra Kasturi	BI	1.50		
		SAI	0.30		
		Total	**1.80**	**RAU, PUSA**	**1.80**
239	Rajendra Mahsuri1	JH	11.68		
		NSC	0.50		
		OR	1.00		
		SAI	14.80	BAU, Sabour	14.80
		UK	0.30		
		WB	3.00		
		Total	**31.28**	**RAU, PUSA**	**16.48**
240	Rajendra Suwasini	BI	1.50		
		Total	**1.50**	**RAU, PUSA**	**1.50**
241	Rajendra Sweta	NSC	0.30		
		SAI	3.60		
		UK	0.30		
		Total	**4.20**	**BAU Sabour**	**4.20**
242	Rajeshwari-1	SAI	1.00		
		Total	**1.00**	**RAU, PUSA**	**1.00**
243	Rajshree (TCA80-4)(IET-7970)	SAI	0.40		
		Total	**0.40**	**RAU, PUSA**	**0.40**
244	Ranidhan(IET19148)	OR	5.00		
		SAI	3.30		
		WB	6.00		
		Total	**14.30**	**OUAT, Bhubaneswar**	**14.30**
245	Ranjeet(IET-12554)	NSC	0.10		
		SAI	11.90		
		WB	1.50		
		Total	**13.50**	**AAU, Titabar**	**13.50**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
246	Rajit Sub-1	AS	40.00		
		NSC	0.20		
		SAI	0.90		
		Total	**41.10**	**RARS, Titabar**	**41.10**
247	Rashmi(JR-201)	MP	11.30		
		Total	**11.30**	**JNKVV, Jabalpur**	**11.30**
248	Rasi(IET-1444)	KK	0.30		
		Total	**0.30**	**IIRR, Rajendranagar**	**0.30**
249	Ratna	SAI	0.10		
		Total	**0.10**	**NRRI, Cuttack**	**0.10**
250	Ratnagini-1	MH	0.60		
		Total	**0.60**	**ARS, Ratnagiri**	**0.60**
251	Ratnagiri-24(RTN24)(IET-19812)	MH	0.50		
		Total	**0.50**	**ARS, Ratnagiri**	**0.50**
252	Ratnagiri-6	MH	0.50		
		Total	**0.50**	**ARS, Ratnagiri**	**0.50**
253	Ratnagiri-7	MH	0.50		
		Total	**0.50**	**ARS, Ratnagiri**	**0.50**
254	Ratnagiri- 8	MH	0.50		
		Total	**0.50**	**ARS, Ratnagiri**	**0.50**
255	RGL 2537	AP	8.00		
		OR	3.00		
		Total	**11.00**	**ANGRAU, Guntur**	**11.00**
256	RNR 15048(Telangana Sona)	AP	5.00		
		KK	8.10		
		NSC	1.10		
		TG	12.00		
		UP	5.00		
		Total	**31.20**	**PJTSAU, Hyderabad**	**31.20**
257	RTN-5	MH	3.00		
		Total	**3.00**	**ARS, Ratnagiri**	**3.00**
258	Sabita(IET-8970)	SAI	1.70		
		WB	2.50		
		Total	**4.20**	**RRS, Chinsurah**	**4.20**
259	Sabhour Shree	BI	35.00		
		Total	**35.00**	**BAU, Sabour**	**35.00**
260	Sabhour Surbhit	BI	35.00		
		Total	**35.00**	**BAU, Sabour**	**35.00**
261	Sakoli-9	MH	0.50		
		Total	**0.50**	**ARS, Sakoli**	**0.50**
262	Sambha Sub-1 (IET21248)	NSC	0.50		
		0R	3.00		
		SAI	0.30		
		TN	1.50		
		UP	8.00		
		WB	1.00		
		Total	**14.30**	**NRRI, Cuttack**	**14.30**
263	Samleshwari (IET-17455)	CG	4.00		
		MP	4.30		
		Total	**8.30**	**IGKV, Raipur**	**8.30**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
264	Sampada (IET19424)	BI	30.00		
		OR	1.00		
		Total	**31.00**	**IIRR, Rajendranagar**	**31.00**
265	Sampriti (IET-21987)	WB	2.00		
		Total	**2.00**	**RRS, Bankura**	**2.00**
266	Sarala (CR-260-77) (IET-10279)	OR	3.00		
		SAI	0.90		
		Total	**3.90**	**NRRI, Cuttack**	**3.90**
267	Sarjoo-52	NSC	0.20		
		SAI	11.10		
		Total	**11.10**	**NDUAT, Faizabad**	**11.10**
268	Satyabhama	OR	6.00		
		Total	**6.00**	**NRRI, Cuttack**	**6.00**
269	Savitri (IET5897) CR 1009	AP	2.00		
		NSC	0.50		
		SAI	1.75		
		Total	**4.25**	**NRRI, Cuttack**	**4.25**
270	Shabhagidhan (IET-19576)	BI	72.00		
		CG	20.00		
		JH	11.68		
		MP	21.00		
		NSC	0.50		
		OR	12.00		
		SAI	9.30		
		TP	0.40		
		WB	3.00		
		Total	**149.88**	**CRURRS, Hazaribhag**	**149.88**
271	Sharavathi (IR-57773)	SAI	1.00		
		Total	**1.00**	**UAS, Shivamogga**	**1.00**
272	Shatabdi (IET-4786)	MP	3.60		
		SAI	25.20		
		TP	0.10		
		WB	28.00	**RRS, Chinsurah**	**28.00**
		Total	**56.90**	**NRRI, Cuttack**	**28.90**
273	Shitasdhan-1 (AAIR2)(IET20928)	UP	5.00		
		Total	**5.00**	**SHUATS**	5.00
274	Shitasdhan-2	UP	2.00		
		Total	**2.00**	**SHUATS**	2.00
275	Shitasdhan-3	UP	2.10		
		Total	**2.10**	**SHUATS**	2.10
276	SHOBHINI(RNR2354) (IET21260)	WB	1.00		
		Total	**1.00**	**PJTSAU, Hyderabad**	**1.00**
277	Shreyas	NSC	0.30		
		Total	**0.30**	**RRS, Moncompu**	**0.30**
278	Shyamala (IET12561, R259-WR-37-2)	SAI	0.10		
		Total	**0.10**	**IGKV, Raipur**	**0.10**
279	SLO 51	AP	0.10		
		Total	**0.10**		**0.10**

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
280	SITA	SAI	1.15		
		Total	**1.15**	**BAU, Sabour**	**1.15**
281	SJR-5(IET-19972) Last year not lifted. This year will not be produced	MP	11.00		
		Total	**11.00**	**SKUAST, Chata**	**11.00**
282	Sujala (CNR-2)(IET20235)	MP	11.70		
		SAI	0.10		
		WB	0.50		
		Total	**12.30**	**RRS, Chinsurah**	**12.30**
283	Surendra (IET-12815)	SAI	0.90		
		Total	**0.90**	**OUAT, Bhubaneswar**	**0.90**
284	Swarna Sub-1 (CR-2539-1)(IET20266)	AS	20.00		
		BI	33.00		
		CG	96.70		
		HIL	1.00		
		NSC	1.00		
		OR	30.00		
		SAI	16.25		
		TN	2.50		
		TP	0.10		
		UK	0.30		
		WB	10.00		
		Total	**210.85**	**NRRI, Cuttack**	**210.85**
285	Subour Ardhajal	BI	35.00		
		Total	**35.00**	**BAU, Sabour**	
286	Sabour Deep	BI	15.00		
		Total	**15.00**	**BAU, Sabour**	
287	Swarna Shreya	MP	16.50		
		Total	**16.50**	**ICAR, Patna**	
288	Tarunbhog Selection- 1	CG	3.00		
		Total	**3.00**	**IGKV, Raipur**	**3.00**
289	Tella Hamsa	KK	1.50		
		Total	**1.50**	**PJTSAU, Hyd**	**1.50**
290	Thanu	KK	2.25		
		NSC	0.20		
		Total	**2.45**	**UAS, Bangalore**	**2.45**
291	TRY3	TP	0.10		
		Total	**0.10**	**TNAU, Coimbatore**	**0.10**
292	Thunga (IET13901)	KK	4.75		
		Total	**4.75**	**UAS, Bangalore**	**4.75**
293	Uma	AP	4.00		
		KK	3.30		
		NSC	5.00		
		SAI	1.80		
		Total	**14.10**	**RRS, Moncompu**	**14.10**
294	Vallabh Basmati-24(IET20827)	SAI	0.20		
		Total	**0.20**	**SVBAU & T, Meerut**	**0.20**
295	Vandana (RR167-182)	JH	2.92		
		Total	**2.92**	**CRURRS, Hazaribhag**	**2.92**
296	Varshadhan (CRLC-899)	OR	1.20		

S. No	Variety Name	Indented by	Quantity (Qtls)	To be Produced by	Quantity (Qtls)
	(IET-16481)	SAI	1.10		
		WB	3.00		
		Total	**5.30**	**NRRI, Cuttack**	**5.30**
297	Vijetha (MTU1001)	CG	20.00		
		KK	9.80		
		MP	32.00		
		MH	1.00		
		NSC	1.00		
		OR	20.00		
		SAI	20.00		
		TG	2.10		
		WB	1.00		
		Total	**106.90**	**ANGRAU, Guntur**	**106.90**
298	Vishnubhog Selection-1	CG	2.30		
		Total	**2.30**	**IGKV, Raipur**	**2.30**
299	VL Dhan- 157(VL31611) (IET22292)	UK	2.50		
		Total	**2.50**	**VPKAS, Almora**	**2.50**
300	VL Dhan-68(VL31611)(IET22283)	UK	8.00		
		Total	**8.00**	**VPKAS, Almora**	**8.00**
301	VL Dhan-85(IET16455)(VL3613)	UK	0.60		
		Total	**0.60**	**VPKAS, Almora**	**0.60**
302	VL Dhan-158	NSC	0.20		
		Total	**0.20**	**VPKAS, Almora**	**0.20**
303	Warangal Sannalu (WGL32100) (IET-18044)	MP	12.50		
		Total	**12.50**	**PJTSAU, Rajendranagar**	**12.50**
304	WGL-347	TG	1.00		
		Total	**1.00**	**PJTSAU, Rajendranagar**	**1.00**
305	WGL-44	TG	1.00		
		Total	**1.00**	**PJTSAU, Rajendranagar**	**1.00**
Total			**4805.86**		