



प्रगति प्रतिवेदन

# Draft Proceedings of 56<sup>th</sup> Annual Rice Research Group Meeting

अखिल भारतीय समन्वित चावल सुधार परियोजना  
All India Co-ordinated Rice Improvement Project

IIRR, Hyderabad 16-17<sup>th</sup> & 19-20<sup>th</sup> April, 2021  
(Conducted through video conference)



2021



भाकृअनुप-भारतीय चावल अनुसंधान संस्थान  
भारतीय कृषि अनुसंधान परिषद

**ICAR-Indian Institute of Rice Research**

Indian Council of Agricultural Research  
Rajendranagar, Hyderabad - 500 030

# **DRAFT PROCEEDINGS**

**56<sup>th</sup> Annual Rice Research Group Meetings**  
**16-17<sup>th</sup> & 19-20<sup>th</sup> April, 2021**  
(Video Conferencing)

## **All India Coordinated Rice Improvement Project (AICRIP)**



**ICAR–Indian Institute of Rice Research**

(Indian Council of Agricultural Research)

Rajendranagar, Hyderabad-500 030, Tel: 91-40-24591218,

Fax: 91-40-24591217, email :director.iirr@icar.gov.in;www.icar-iirr.org





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## **INAUGURAL SESSION**

**Chairman :** Dr. T. Mohapatra, Secretary, DARE & DG, ICAR, New Delhi  
**Co-Chairman:** Dr. Y. P. Singh, ADG (FFC), ICAR, New Delhi  
Dr. D. K. Yadava, ADG (Seeds), ICAR, New Delhi,

The inaugural session of the 56<sup>th</sup> Annual Rice Research Group Meeting was held at ICAR-Indian Institute of Rice Research, Hyderabad on 19<sup>th</sup> April, 2021 in virtual mode. Dr. D. Subrahmanyam, Director (Acting), ICAR-Indian Institute of Rice Research welcomed the dignitaries and delegates of AICRIP, QRT, IRRI, Private seed companies and participants from cooperating centres for the meeting.

Dr. D. K. Yadava, ADG (Seeds) was impressed with the record rice production of 120.30 mt during 2020-21 as against 118.87 mt of previous year (2019-20). He informed the house that India is the leading exporter of Basmati rice wherein PB 1121, PB 1501 and PB 1782 play a major role and India is getting 50000 crores of foreign exchange annually by exporting both basmati and non-basmati rice globally. Significant progress has been made in the rice biofortification program wherein 10 rice biofortified varieties have been released with enhanced Zn and Protein. With the deployment of molecular tools and techniques a few elite rice varieties have been introgressed with genes /QTLs governing resistance /tolerance to various pest, disease and abiotic stresses. He specifically mentioned the need for short duration high yielding rice varieties and reiterated the role of private sector in hybrid rice research and development. He stressed upon putting sincere and serious efforts while conducting trials, recording agronomic data and submitting reports. He informed that council is extending financial support by releasing 200 crores annually to AICRIP programs which must be translated into enhancement of production, productivity and export of rice.

Salient findings of AICRIP program as well as research highlights of ICAR-IIRR has been presented by Dr. D. Subramanyam, Director (Acting). He appreciated the efforts of cooperators in sending the data to the tune of 84%, 74% and 100% by funded centres, voluntary centres and private sector respectively. He mentioned that production oriented survey information will be utilized in the collection of consumption pattern with the involvement of TTT section through online survey method.

Prof. H.S.Gupta, Chairman, Quinquennial Review Team (ICAR-IIRR) pointed out that significant achievement has been made in genetic enhancement of rice and India has emerged as the largest exporter of rice in the world. However compared to wheat, the performance of rice AICRIP need to be accelerated so that it contributes to national food security. He recommended to have one time grant from ICAR in order to improve the working facilities thereby enhancing output of AICRIP program operating not only at headquarters but also cooperating centres.

Dr. T. Mohapatra, DG, ICAR appreciated the efforts of AICRIP program in conducting trials across length and breadth of the country and reporting the results despite the covid pandemic situation. He suggested to set the target for rice production in the coming years ie., 2030 and 2050 which can be achieved through breeding newer high yielding rice genotypes. Some of the important deliberations made during the course of his speech are as follow.

- Keeping in view the changing climate, emphasis should be laid on crop diversification involving low water requiring crops such as pulses, millets, horticultural crops and other remunerative crops apart from cultivation of rice for doubling farmers' income.
- He cautioned the centres especially funded centres to take utmost care while conducting the trials and furnishing the data. The centres that repeatedly failed to conduct as well as furnish trial data may even be dropped from AICRIP system.
- It is required to bring innovative changes in the current multilocation evaluation system of rice. Considering the yield levels reported in AICRIP trials, there is a need to set the benchmark yield levels ecosystem-wise so that varietal entries showing yield level above the bench mark will only be promoted.
- Multiple resistance/tolerance against pests, diseases and abiotic stresses prevalent in the target area has to be given priority along with bench mark yield during promotion of varieties.
- He pointed out the progress of rice research for having steadily increased the export of rice earning considerable foreign exchange of about sixty six thousand crores rupees. Considering the demand for sticky rice in other countries, there is a need to plan for exploring the possibilities of cultivation and export of sticky rices to the required countries and generate revenue. Export oriented research can be initiated in AICRIP.
- Concerted efforts have to be made on processing and value addition in rice such as modification of starch, biofortification of rice with enhanced Zn and protein content at institutional level.
- It is high time to promote the new varieties developed and released through AICRIP system rather than banking on age-old varieties such as Swarna and Samba mahsuri of SAUs. The new releases should be popularized through FLDs and SC/ST or TSP programs.
- He suggested that the production oriented survey should primarily focus on collecting information on consumption pattern of rice and varietal composition in different states or regions. Based on this POS information, the newly released varieties possessing the specific beneficial traits could be grown on large scale for demonstrating their merits in the target areas. If they show superiority over the mega varieties of state releases, those varieties have to be recommended for the target regions replacing the old varieties.

- Additionally POS has to be effectively utilized while formulating action plan of AICRIP and it was indicated that a review would be made in the forthcoming Annual Rice Group Meeting for examining the percolation of POS in action plan.
- A mention was made about identifying nitrogen use efficient rice lines which subsequently have to be integrated into breeding programs to generate high yielding elite lines insulated with high nitrogen use efficiency.
- A critical analysis has to be undertaken in AICRIP - Soil science to formulate the trials for estimating the effect of nano fertilizers and silicon spray in saving 20 to 30% of fertilizer usage.
- Although progress has been made in the development and utilization of MAS derived rice varieties in comparison with other crops, it is time to introgress a combination of resistant/tolerant genes/QTLs for various biotic and abiotic stresses respectively keeping in view the requirement of target locations.
- He putforward a suggestion to identify and release crop production and crop protection technologies in addition to varietal technologies during AICRIP workshop followed by awarding certificates to the centres/Scientists for the technologies.
- Suggestions were made regarding pesticide evaluation trials that after 3 years of testing, a recommendation should be made.
- There is a need to critically evaluate the potential of varieties under alternate wetting & drying and aerobic rice in improving rice yield.

Dr. Y. P. Singh thanked Hon'ble Director General for his in depth analysis and discussion. He also congratulated all the cooperators for the good conduct of the trials. The session ended with vote of thanks by Dr. R. M. Kumar.



## **TECHNICAL SESSION: I**

**Chairman** : Dr. Y. P. Singh, ADG (FFC), ICAR, New Delhi  
**Co-Chairman:** Dr. D. K. Yadava, ADG (Seeds), ICAR, New Delhi  
**Rapporteurs** : Dr. G. Padmavathi, ICAR-IIRR, Hyderabad  
Dr. G. S. Laha, ICAR-IIRR, Hyderabad  
Dr. K. Chattopadhyay, ICAR-NRRI, Cuttack

### **CROP IMPROVEMENT**

The inaugural session was followed by technical sessions in the afternoon of 19<sup>th</sup> April 2021. Varietal improvement for irrigated ecosystems & breeders seed production was presented by Dr. AVSR Swamy, PI (In-charge), AICRIP. Dr B.C.Viraktamath, one of the PAMC experts showed concern about narrow genetic base of the entries nominated into biofortification trials and suggested to strengthen the pre-breeding work specifically in the cooperating centres.

Dr. B. C. Patra from NRRI, Cuttack presented results of Varietal trials conducted in rainfed ecosystem. A huge breeder seed indent (110 Q) during 2017 - 20 for high protein varieties such as CR Dhan 310 and CR Dhan 311 was placed. Large field demonstrations are being conducted utilizing in-house resources as well as KVKs in Odisha and Jharkhand states to popularize varieties developed and released by NRRI.

It was followed by the presentation on national Basmati trials as well as NIL trials for drought tolerance, BLB, blast and imazethapyr herbicide by Dr. E. Ranjit. Currently mechanisms of trait (Herbicide tolerance) licensing, setting up contract research modules and guidelines for direct commercialization of products is under processing.

Dr. A.S. Hari Prasad, PS, IIRR, Hyderabad presented the results of hybrid rice trials. Dr. A.K. Singh expressed his concern about improving the hybrid rice program thereby developing number of rice hybrids. As Public-Private Sector Partnership is required in hybrid rice development, it was felt to have the establishment of Hybrid Rice Consortium thereby increasing the public sector contribution to hybrid rice.

### **CROP PRODUCTION**

#### **Agronomy**

Dr. R. Mahendra Kumar, PI Agronomy, presented the consolidated results of Agronomy. He mentioned that out of 274 allotted trials, data were received from 229 centres (84% data receipt). Agronomy trials consisted of mainly 4 groups viz., nitrogen management trials, cultural management trials, weed management trials and trials on resource conservation technologies in rice based cropping systems. He mentioned that in Nitrogen management trials, 155 AVT-2 entries belonging to 23 categories were evaluated at different locations under different levels of nutrients, i.e., 50 and 100% of the

recommended dose of nutrients and highlighted important promising cultures under different ecosystems. He mentioned that few cultures were found promising at 50% RDF also and overall, 32 cultures were promising among 155 cultures tested. He mentioned that some of the herbicide tolerant NILs of Pusa Basmati 1121 showed complete tolerance to different doses of imazethapyr herbicide. In cultural management trials, he highlighted that mechanical transplanting resulted in higher grain yield (2 to 16%) than that of manual transplanting across the locations. Due to late sowings, grain yield loss was more in dry-DSR (3 to 31%) compared to that of wet-DSR (3 to 24%). He mentioned that Alternate wetting and drying (5.75 to 6.39 t/ha) continued to provide on par grain yield with flooding. Under weed management trials, he mentioned that group wise and total weed biomass was lowest under mechanical transplanting system and highest under un-puddled direct seeding system. He mentioned that in IPM adopted fields, the mean weed population reduction over the locations was 44.36% and 39.82% at Active vegetative and Panicle initiation stages respectively; the mean dry weed biomass reduction over the locations was 46.11% and 41.51% at Active vegetative and Panicle initiation stages respectively, resulted in yield advantage of 16.53%. He also mentioned that in clay loam and clay soils, chemical weed control using pre and post emergence herbicides was superior and in sandy loam soils, mechanical weeding using weeder showed better performance. In rice based cropping system trials, he mentioned that The REY of system productivity was higher at three locations due to rice- residue incorporation in Vadagaon, Karjat and ARI-Rajendranagar (9.25, 7.59 and 8.59 t/ha). In another trial the results indicated that PB1728 and PB1718 at Chatha, AD17037, ADT53 and AD17152 at Aduthurai, GNV1089 and NLR40024 at Gangavathi, RNR15048 and CTH1 at Mandya, Bamleswari and IGKVR1244 at Jagadapur and Luit and Dikhow at Titabar were found promising with better yields under late planting. New promising Sorghum hybrids having high yield potential were tested in rice fallows wherein rice cultivated as Transplanted, Wet DSR and Dry DSR method in Kharif. Mean over the locations, transplanting method gave comparable yields with wet DSR methods (4.89 t/ha to 6.00 t/ha) at Ragolu and Mandya.

## **Soil Science**

Dr. M. B. B. Prasad Babu, Principal Scientist, Soil Science, ICAR-IIRR, presented the consolidated results of Soil science. He mentioned that there were 6 major soil science trials and 2 trials in collaboration with other disciplines. In long-term soil fertility management in RBCS, RDF + FYM was superior or on par with RDF at different locations. FYM alone yielded on par to RDF in *Kharif* season at MTU and TTB. He mentioned that in yield gap trial, mean yield gap between low and high yielders at selected sites indicated maximum yield gap (52.9%) at Ludhiana and minimum at Pantnagar (17.9%). He mentioned promising genotypes to soil sodicity and acidity. In trials on residue management in rice based cropping system, RDF resulted in significantly highest grain yield at KHD (6.38 t/ha), MTU (7.28t/ha), PNT (7.70 t/ha) and Pusa (3.98 t/ha). He mentioned that residue treatments were on par with each other and with 100% RDF at

KHD, PDU and PSA. Application of Pusa Decomposer performed better than non-application. In screening of trials for nitrogen use efficiency (NUE), among 10 varieties, CNN 5 recorded highest yield followed by CNN4, ARRH7576 and TI -93. He mentioned that the first year of study on “Enhancing productivity of Organic Rice cultivation”, at three locations has shown a positive response to inorganic RDF at Chinsurah and Khudwani while FYM @ 10 t/ha + VC 2.5 t/ha + spray of liquid manure at Karaikal. Improvement in the soil fertility (NPK and micronutrients) was observed with 75% organics at Chinsurah and 100% inorganic at Khudwani.

Dr. A. K. Singh, Chairman of the session suggested that we need to quantify the benefits of water saving technologies like aerobic rice, Direct Seeded Rice (DSR) and Alternate Wetting and Drying (AWD) in terms of saving labour and water compared to conventional transplanting. He also expressed that we also need to estimate the yield penalty, if any and how we manage the yield penalty in these water saving technologies. He also suggested that some of the technologies from the Natural Resource Management and Plant Protection section for which sufficient data have been generated after multiple year testing, can be released during AICRIP meeting. During the discussion he suggested that the details of advantages/benefits of ‘Pusa Decomposer’ in terms of enzyme activity and time to decompose the biomass can be documented which will help in further dissemination/popularization of the technology. In response, Dr. R. M. Kumar and Dr. M. B. B. Prasad Babu clarified that, this was the first year of experimentation with ‘Pusa Decomposer’ and data regarding yield and other parameters are documented. During the discussion, he pointed out that it would be important to know the varieties which occupied large area under DSR in Punjab during 2020.

### **Plant Physiology**

Dr. P. Raghuveer Rao, Principal Scientist, Plant Physiology, ICAR-IIRR, presented the detailed reports of Plant Physiology. He mentioned that there 6 major trials in Plant Physiology. Salient points of different Plant Physiology trials were application of silicon (T2) resulted in >11% increase in mean grain. Under Silicon trial, it was identified that Si increased yield and yield attributes along with inducing biotic and abiotic stress tolerance in rice. In rainfed upland situation (dry spells of drought), genotypes like IET28241 and IET28242 were found to be superior based on drought indices. High temperature tolerance studies revealed that under elevated temperature (4°C-8°C) there was a yield penalty in all the genotypes under study. However, some of the promising cultures IET 29156, IET 29157, IET 29152, IET 29159 and IET 29155. In screening for multiple abiotic stress tolerance trial, genotype like CR-3918-IL-160, IET 24426, AC-35764, AC-34975 and Dubraj were identified as promising as they possessed tolerance to multiple abiotic stresses. In trial on screening for submergence tolerance, some of the promising entries were AC-41585, IET 24434, IET 24434, CR-3918-IL-160, Swarna Sub-1 and AC-41585. In trial on screening of elite rice germplasm for low light stress tolerance, results indicated low light stress resulted in significant loss in yield and its components. Under low light

stress higher grain yield was shown by check Swarnaprabha followed by IET27537, IET28283, IET29032 and IET26744. Among the tested entries under low light condition the biomass was highest in Swarnaprabha followed by Gayatri. As far as harvest index is concerned Swarnaprabha was most promising followed by IET27537, IET29025, IET29032 and IET29033

Dr. A. K. Singh, chairman of the session told that there is high silica content in the soil and is not a limiting factor and wanted a clarification even if silica is not a limiting factor, how external application of silica is increasing rice yield. In response, Dr. Raghuveer Rao explained that even though silica is abundant in soil, it is not available to plants and application of silicon solubilizer can increase the availability to plants. In response, Dr. S. R. Voleti, retired Principal Scientist and Director (A), ICAR-IIRR clarified that silica in soil is not in soluble form and application of nitrogen inhibits silica absorption. Thus application of silicon solubilizer can increase its uptake. He also clarified that effect is more visible in alkaline and deficient soils. Moreover, silica helps in biotic stress tolerance and results in erect leaves which helps in getting higher solar radiation and this helps in increased yields. Dr. A. K. Singh suggested that this can be made as a technology.

## **CROP PROTECTION**

### **Entomology**

Dr. B. Jhansi Rani, PI, Entomology presented the consolidated report of AICRIP entomology trials. She mentioned that All India Coordinated Entomology Programme was organized and conducted during *Kharif* 2020 with seven major trials involving 244 experiments that were conducted at 42 locations. She mentioned that data receipt was 88% despite pandemic situations. She presented promising entries in different screening nurseries against different insect pests. Some of the entries found promising against plant hoppers were BPT 3025, HWR-1-IR83784-5-28-B, HWR-8-IR 54751-1-2-44-15-2-3-B, HWR-15-IR 75870-5-8-5-B-5-B, HWR-16-IR73382-80-9-3-13-2-2-1-3-B, JGL 35076, JGL 35085, JGL 35158, KNM 7660, KNM 10081, RMS-ISM-BPh33-1, RP 221-3-5-2, RP 179-3-9-1, KNM 7629, two land races viz., PTB 21 and IBT-BPH 1. Against leaf folder, one mutant culture of PTB 18 (Cul M9) was found promising. Some of the promising entries against stem borer were HWR 20, W1263, JGL 34452, JGL 32994, WGL 1062, HWR 17, TKM 6, RP 5587-B-B-B-267, RP 5587-B-B-B-273-1, RP 5587, RP 5588-B-B-B-B-223 and BK 64-116. She mentioned that all insecticides treatment -chlorantraniliprole, cartap hydrochloride, triflumezopyrim was the most effective module against Stem borer, Leaf folder, WBPH, GLH and the module gave highest yield and all botanicals- Neemazal, neem oil and eucalyptus oil module was effective for gall midge. In ecological engineering for pest management (EPPM) trial, she mentioned that EPPM significantly reduced hopper population at Warangal when compared to farmers practice and increased the yield. In Bio-intensive pest management trial (BIMP) she mentioned that stem borer incidence was reduced in BIMP plots as compared to farmers practice and it was observed that natural enemies were higher in BIMP plots in almost all locations. In integrated pest

management trial, it was mentioned that incidence of different insect pests, diseases and weeds was significantly low in IPM plots across the locations which resulted in higher yield and BC ratio. In trials on ecological studies she mentioned that incidence of major pests was high in late planting whereas hispa and thrips incidence was high in early planting.

Dr. A. K. Singh, chairman of the session suggested that germplasm which are found promising to different insect pests after multi-year testing should be documented and should be available to breeders for further characterization and use. He also suggested that action taken should be more meticulous.

### **Plant Pathology**

Dr. M. S. Prasad, PI, Plant Pathology, presented the consolidated report of Plant Pathology. He mentioned that All India coordinated Plant Pathology trials consisted of 15 major trials and a total 634 experiments were proposed. He mentioned that 85% data were received. Five national screening nurseries comprising of 1263 entries were evaluated for their reactions to major rice diseases at 49 locations. He highlighted the promising entries in different nurseries against different diseases. Entries shown moderate resistant reaction to more than two diseases were HWR-16 (LB, NB, SHB, BS), CB 16118 (NB, SHB, BS), HWR-15 (NB, SHB, BS), HWR-24 (LB, NB, SHB), HWR-31 (SHB, BS, RTD), RP-Bio-Patho-4 (LB, NB, BLB), RP-Bio-Patho-5 (LB, NB, BLB) and RP-Patho-7 (LB, NB, BS). Another thirteen entries viz., HWR-17, HWR-26, HWR-29, HWR-7, KNM 10104, KNM 7786, RP-Bio-Patho-10, RP-Bio-Patho-11, RP-Bio-Patho-3, RP-Bio Patho-9, RP-Patho-3, WGL 1472 and WGL 1525 found promising against minimum of two diseases. He also presented reaction pattern of blast and BB pathogen on different rice differentials at different hot spot locations. In Disease observation trial, he mentioned that the incidence of blast was more in the late sown crops than when compared to the early and normal sown crops whereas the incidence of sheath blight was found to be more in the early sown crops when compared to the normal and late sown crops. In chemical control trial, he mentioned that isoprothiolane 40% EC (1.5 ml/l) and kitazin 48% EC (1.0 ml/l) were effective in minimizing the leaf and neck blast disease and increasing the yield. Fungicides like thifluzamide 24% SC (0.8g/l), difenoconazole 25% EC (0.5 ml/l) and tebuconazole 25.9% EC (1.5 ml/l) were found effective in sheath blight management and increased the yield. Difenoconazole 25% EC (0.5 ml/l) was also found effective against sheath rot and brown spot diseases. Tebuconazole 25.9% EC (1.5 ml/l) showed broad spectrum activity against sheath blight, sheath rot, brown spot and blast. In yield loss trial, results from different locations revealed that with increase in disease intensity (blast, sheath blight and bacterial blight) where decrease in yield. Incidence of different rice diseases in different crop establishment methods and crop residue management methods were discussed.

Prof. R. Sridhar, Retired Principal Scientist, Plant Pathology, IACR-NRRI congratulated for nice compilation and complemented for developing artificial inoculation technique for

false smut of rice and suggested for further improvement for use in large scale screening. He expressed whether we should look for very highly resistant genotypes with score below 3? He suggested that we should also allow the pathogen also to survive and multiply to a certain degree to reduce unwanted mutation to a more virulent form. He suggested that a moderate level of resistance with a score between 3-5 is enough for diseases like blast and bacterial blight. He also suggested that locations where artificial inoculation was done and locations where entries were screened under natural conditions should be separated out and compared. Dr. P. N. Sharma, Principal Plant Pathologist from Palampur expressed that none of the monogenic lines was resistant to bacterial blight and it may be because there may be different virulences/races in a particular area and suggested that virulence structure of the pathogen can be analyzed. Dr. A. K. Singh told that sheath rot and grain discoloration have become a big problem and identification of genotypes resistant to these diseases would be very important.

Dr. G. S. Laha, Principal Scientist, Plant Pathology, ICAR-IIRR, presented the consolidated reports of Production Oriented Survey. He mentioned that during 2020, survey was conducted in 10 rice growing states by 12 AICRIP centres. A total of 571 villages in 78 districts were covered during the survey. The seasonal rainfall over the country as a whole was 109% of its Long Period Average (LPA) in 2020. A number of severe cyclones also occurred in this year which affected the rice crop in coastal states. Among the states surveyed, hybrid rice occupied largest area in Uttar Pradesh and Haryana. Swarna (MTU 7029) and Samba Mahsuri (BPT 5204) remained the most widely cultivated rice varieties and in Basmati, Pusa Basmati 1121 was most widely cultivated. He mentioned that percentage of farmers adopting seed treatment was high (> 50%) in states like Haryana, Punjab, Karnataka and Maharashtra. Many farmers from the states of AP, Telangana, Karnataka, Haryana and Punjab applied high dose of N which was more than recommended. During 2020, DSR was popular in many states. More than 50% area was under DSR in West Godavari district. In Punjab, ~ 5 lakh ha was under DSR. Overall weed intensity during 2020 was low and use of herbicides has increased. Major demands of the farmers were short duration rice varieties and varieties suitable for direct sowing, subsidy on implements and increase in MSP. Data on survey of biotic stresses revealed that during 2020, leaf blast was widespread in Haryana. Very severe leaf blast incidence was reported from Mandya and Mysuru in Karnataka and many parts of Telangana. Severe neck blast was reported from parts of Karnataka and Telangana. During 2020, bacterial blight was high in many places. Severe BB was reported from coastal AP especially after the cyclone Nivar, in parts of Konkan region of Maharashtra, parts of Punjab and parts of Telangana. False smut was widespread in Telangana and sheath blight was high in Punjab and parts of Karnataka. Severe brown spot was reported from Gonda and Shravasti districts of eastern UP. Rice crop was severely damaged by stem borer in parts of Konkan region. Leaf folder damage was high in Mandya district. Severe BPH incidence and hopper burn were observed in many parts of Mandya and Mysuru. Severe gall midge was reported from parts of Telangana. Some of the general problems

were Acute shortage of labours and high wages, Increase in the cost of hiring of equipments especially combine harvester and Low minimum support price.

Dr. R. Sridhar. Retired Principal Scientist, Plant Pathology, IACR-NRRI expressed that POS should also collect data on not only biotic constraints but also on other aspects of rice cultivation. In response, Dr. Laha clarified that survey is conducted by a team comprising of scientists from different disciplines and data are collected for every aspects of rice cultivation and all the information are documented in the report. Dr. B. C. Virakatmath suggested that POS should contain data on varietal coverage in each state. In response, Dr. Laha clarified that from last 4-5 years, data on varietal coverage are presented in the report for some states. Regarding application of excess dose of Nitrogen, Dr. A. K. Singh suggested that it is our duty to educate the farmers regarding application of correct dose of fertilizers. Dr. Y. P. Singh thanked the chairman and all the participants for excellent discussion of the AICRIP results.

## **TECHNICAL SESSION II: DISCIPLINEWISE PLANNING AND FINALIZATION OF TECHNICAL PROGRAMMES FOR 2021-22**

### **CROP IMPROVEMENT**

**Chairman: Dr A.K. Singh, Director, IARI**  
**Co-Chairman: Dr Leena Kumary**

Breeder's group meeting with approximately 150 breeders was held on 15th April 2021 under the chairmanship of Dr AK Singh, Director, ICAR-IARI. Dr Leena Kumary, Former Registrar & Head, Rice Programme, KAU co-chaired the session. Dr AVSR Swamy, Principal Scientist, Plant Breeding & PI-AICRIP (I/c) in his introductory remarks welcomed Dr D Subramanyam, Director (A), ICAR- IIRR, Dr. D.K. Maiti, Director (A), ICAR-NRRI and breeders from both public and private sector.

Dr D Subramanyam briefed about the problems due to COVID in seed dispatch, decreased labour availability and appreciated the support of cooperating centres in trial conduct and evaluation of the performance of the entries in different trials through self-monitoring teams. Dr DK Maiti mentioned about the importance of unfavourable rainfed ecology and briefed about the upland and rainfed ecology trials.

Dr Leena Kumary in her opening remarks paid homage to Dr Mahadevappa (late), doyen of rice research. She emphasized that research community should focus on developing high yielding lines with multiple stress tolerance including salinity and heavy metal tolerance. Dr AK Singh appreciated all the stakeholders for highest ever rice exports of 15.5 mt during 2020-21 and for high production that helped to sustain the pandemic with a buffering stock of 70 mt of rice. This is a figure only up to Feb 2021 and data for March is yet to come. During the meeting, there was a detailed discussion on trial conduct and promotions/deletions/shifts /repeats in the irrigated, rainfed and basmati trials conducted during 2020.

### **Irrigated Ecology**

**Rapporteurs : Dr Suneetha Kota, ICAR-IIRR**  
**Dr Jyothi Badri, ICAR-IIRR**  
**Dr Mridul Chakraborti, ICAR-NRRI**

Dr G Padmavathi presented progress report of ETP trials, Dr R Fiyaz presented about IME and Late trials including NILs, Dr Jyothi Badri gave an account of IM trials including NILs, Dr Aravind Jukanti on Biofortification trials, Dr C Gireesh on Coastal salinity and Boro trials, Dr Suneetha Kota on AL&ISTVT, Dr MS Anantha on AVT-Aerobic and nutrient use trials including NILs, Dr AVSR Swamy on MS trials, Dr Ch Suvarna Rani on IVT- ASG and IVT-Aerobic trials and Dr Senguttuvel on IHRT trials. Based on the deliberations made, the following decisions were taken in the session.



- ✓ Swarna (115-120 days DFF) in IVT-L recorded a mean DFF of 100 days in Kharif, 2020 due to delayed transplanting. When planting is done in July, DFF of long duration varieties generally gets reduced by 7-15 days of flowering. Hence, IETs 29343, 29349, 28524, 29351 and 29345 are considered for promotion to AVT-1L.
- ✓ Gangavati Ageti, used as sensitive check in the drought stress trials (EDS and NIL-drought-trait verification) is a very early maturing variety and is likely to escape by the time reproductive stage drought stress is imposed. Hence, it should not be used as sensitive check.
- ✓ Comparison should be made among the near isogenic lines (NILs) with common trait/gene/QTL introgressed in the common recurrent parent (RP) background nominated from different centres in addition to comparing the NILs with RP.
- ✓ HRR to be re-tested for the entry IET 27263 in AVT2-IM and IET 27829 (CSTVT). For this, seed is to be sent from concerned/nominating breeder
- ✓ Single location data will not be considered for promotion. However, due to pandemic situation, when only single location data is available in a zone, entries with 15% yield advantage over BVC were promoted and entries with 10-15 % were repeated. For stress trials, entries with >10% yield superiority over BVC were promoted. This is applicable for 2020 testing only. Thus, IET 29420 is promoted to AVT1-Aerob and IET 29414 is considered for repeat in IVT-Aerob
- ✓ Considering the HRR issues, entries (1/2 to 1 kg of the sample) in 3rd year of testing should be sent to rice mills located in and around Hyderabad for estimation of HRR.
- ✓ Centres with >25% non-conduct of trials/non receipt of data should be listed and justification need to be sought.
- ✓ Hybrids Bio799 released through CVRC in 2018 with yield potential of 7.16 t/ha and 28P67 released in 2018 with yield potential of 6.7 t/ha will be used as observational hybrid checks in IHRT trials while HRI- 174 will continue as regular hybrid check and the status will be reviewed next year.
- ✓ In case of NILs for abiotic stress resistance/tolerance (salinity, submergence, drought etc), the following major decisions were made
  - For yield comparison of NILs with recurrent parent (RP) under normal (control) conditions, NIL should be statistically on par with the RP.
  - Since 'yield under stress' is the target trait, yield performance of the NIL should be significantly superior over the RP under stress situations (Trait verification).
  - Yield performance of NILs under stress should not be compared with tolerant checks (TC) or donor parents (DP) because TC or DP not have anything in common with NILs except for the QTL/gene under introgression.

- RP should be considered as sensitive check and there is no need of another sensitive check in the trait verification trial. There is no need of improvement of RP if RP isn't susceptible / sensitive to the stress under consideration.
  - Exposure to the stress should be at the appropriate time and however both RP and NILs derived from it are of the same duration and have same time of flowering, the set of NILs and their RP would experience same amount of stress irrespective of different entries with different durations in a single trial.
  - Since trait verification is taken up at different locations other than the regions for which RP was released, only relative performance can be assessed but not true yield potential. When relative differences (NIL Vs RP) are established under artificial conditions, it can be presumed that similar performances can happen in the area of adoption of RP. As is done for biotic stresses in hot spots or using artificial inoculation, rainout shelter or rabi season where exposure to drought stress can be given in much more controlled manner should be used for trait verification yield under drought stress.
- ✓ Checks for <100 days and >100 days duration in CSTVT and AL&ISTVT will be included in consultation with CSSRI.
  - ✓ When there was a proposal to constitute trial on combined stress of salinity+ Submergence+ Stagnant flooding, since it is a problem specific to certain areas and until the material is developed, it would be continued with the existing trial as phenotyping at all locations for all the multiple stresses is difficult.
  - ✓ For trait verification trials of herbicide (Imazethapyr) resistance in Eastern Zone, ICAR-NRRI may constitute the trials and send the entries and herbicide to the testing centres. However, the technical programme must be sent to IIRR.
  - ✓ The entries for BPH-NIL trials are under testing for the first time and testing data was received from two locations only. Considering this, the best entry may be repeated at more locations with artificial screening facilities like IIRR, GBPUAT, IARI, NRRI, PAU, NIBSM etc. and any other centres from the states for which the recurrent parents are released.

## **Rainfed Ecology**

**Rapporteurs : Dr Meera Kumari Kar, ICAR-NRRI  
Dr K Chatopadyay, ICAR-NRRI  
Dr Anantha MS, ICAR-IIRR**

The breeders from ICAR-NRRI, Cuttack presented the results of 7 rainfed trials. Drs J Mehr presented on AVT-1 EDS, RP Shah on IVT EDS, Anandan on AVT-1RSL, Sutapa on IVT RSL, Mridul on AVT-1 SDW and trait verification of submergence, LK Bose on IVT DW, SK Pradhan on trait verification trial on NILs for Drought tolerance. The decisions taken during the presentation of rainfed ecology trials are given below.

- ✓ Two NILs IET 28834 and IET 28835, other entries IET 28259, 27525 and IET 29024 will be repeated in AVT 1 EDS
- ✓ Due to late arrival of seeds, many centers sown the crop late and thereby there was reduction in flowering duration in many of the entries including checks. Therefore the entries with lesser duration were also considered for promotion in low land ecology.
- ✓ AVT 1 SDW IET 28296 considered for repeat due to the absence of data on adaptability.
- ✓ IET 28319 and IET 28320 should be repeated instead of promotion since these two entries recorded 6% and 7% yield advantage. Only one location was considered for analysis, hence minimum 15% yield advantage should be taken into consideration for promotion. The entry IET 26741 was considered for repeat due to one location data.
- ✓ NIL entry IET 26744 will be repeated as it was not tested in all the gazette notified states (Orissa,, MP, Assam, Tripura and WB) of its recurrent parent during 2020.
- ✓ NIL entry IET 26753 with qDTY 12.1 in the background of Varalu did not perform better than its recurrent parent under drought situations; hence this entry cannot be repeated. Further based on reanalysis of 2017-2020 data from centres with rainout shelter and moisture data, IET 26753 is significantly inferior to RP in 2017, 2018 and 2020 (not tested during 2019).
- ✓ All the introgressed QTLs/genes may not be effective in various backgrounds considering the QTL interactions and background effect.

## **Basmati trials**

**Rapporteurs: Dr Prolay Kumar Bhowmik, ICAR-IARI  
Dr Haritha Bollinedi, ICAR-IARI  
Dr Divya Balakrishnan, ICAR-IIRR**

Dr Gopala Krishnan, IARI presented progress report of two Basmati trials viz., IVT- BT and AVT1-BT and the report presented was finalized as such without any changes.

Further, Dr Santosha Rathod, Scientist (Agrl. Statistics), ICAR-IIRR presented on “Issues in AICRIP trials on Statistical Analysis” and after a detailed discussion on statistical analysis of AICRIP trials with suitable examples of data sets AICRIP trials of last three years, the following decisions were taken.

- ✓ The significance of the trial will be determined based on F value. If the F value at individual location is not significant, data from such locations will not be considered for assessment of entries.
- ✓ CD at 5% will be considered as a criteria for promotion of entries superimposed by stability analysis

- ✓ Existing criteria of CV (5 to 20%) will continue.
- ✓ Simple Lattice design for IVT trials in irrigated trials where there is no stress situation should be followed to avoid more heterogeneity at experiments with more than 25 numbers. Layout given by IIRR for simple lattice design need to be implemented by the locations conducting such trials.
- ✓ Uniformity trial at IIRR needs to be conducted to optimize CV range for the trials and to optimize shape and size of plots.

All the above decisions taken on statistical interventions in the assessment of entries will be applicable to the entries under testing in the first year of testing from 2021. The entries in 2nd and 3rd years will be evaluated as per old norms.

The Breeder's group comprising of >120 participants met virtually during 56<sup>th</sup> ARGM on 19<sup>th</sup> April 2021 to discuss the planning and finalization of technical programmes for 2021-22. The session was chaired by Chairman: Dr. A. K. Singh, Director, ICAR-Indian Agricultural Research Institute, New Delhi, Co-chaired by Dr. D. K. Yadava, ADG (Seed), ICAR New Delhi and Special invitee: Dr. D. Maiti, Director, ICAR-NRRI, Cuttack. Dr. A. K. Singh extended warm welcome to the distinguished delegates from AICRIP centers and private agencies participated virtually in the 56<sup>th</sup> Annual Rice Group Meeting. Dr. AVSR Swamy, PI (In-charge), briefed about the gist of AICRIP varietal trials and presented the details of each entry promoted in different trials and ecologies. In each trial detailed discussions about each entry were held and finalised the technical program for 2020-21.

(For Plant Breeding Group meetings – Drs R Abdul Fiyaz, ICAR-IIRR, Ranjith K Ellur, ICAR-IARI, Mridul Chakkraborthi, ICAR-NRRI acted as rapporeurs)

### **Constitution of Irrigated Trials-2021 ICAR-IIRR**

S.No	Ecology	Trial	Entries promoted for testing in 2021
IRRIGATED TRIALS			
1	ETP	AVT2	IET 26790, 28329, 28354,28343,28358, 28111, 28332, 28356 28115 (9 entries)
		AVT1	IETs 29142, 29177, 29193, 29140, 29197, 29189 (6 Entries)
		IVT	new nominations + 29173(R)
		Checks	CO-51 (National); PR 124 (Northern), Narendra 97 (Eastern), Luit (North Eastern), Sahbhagidhan (Central & Western), MTU 1153 (Southern)- Zonal; US 314 (Hybrid) and local check
2	IME	AVT2	IET 28396, 28010(R), 28008(R), 28032(R), and 28033(R) (5 Entries)
		AVT1	IET Nos. 29246, 29250, 28238,28353,28357,28369, 28374, 28378, 28380,28506,29212,29214,29215,29216, 29217, 29218, 29219,29226,29228,29229,29230,29233, 29235, 29236, 29238,29239,29243, 29247, 29251, 28128 (R), 28347

S.No	Ecology	Trial	Entries promoted for testing in 2021
			NIL's: IET 29203(R) (32 entries)
		IVT	new nominations + Shift from E(TP): IET's 29188, 29189 Shift from L: IET's 29350, 29304 and 29339 (5+ )
		Checks	Gondhra Bidhan-3 (NC); PR 113 (Northern), Lalat (Eastern & North Eastern), Karjat-7 (Western), MTU 1010 (Central and Southern)- (Zonal), MTU 1010 (RP) IR64 sub1(RP) and Local Check
		AVT2	27900, 28171 (H) and 28160 (H) (3 Entries)
		AVT1	IETs 29284, 29268, 28383, 27908, 29256, 29257, 29260, 29263, 29264, 29276, 29278, 29290, 29301 and 29302, 28489 (R), 28422 (R) (15 Entries)
		IVT	New nominations + 28503 (R), 28523 (R), 29286 (R), 29287 (R), 29288 (R) and 29289 (R) Shift from ME: IET29217 (7 Entries+ ...)
		Checks	National-NDR 359; Zonal- PR121 (II), CR Dhan 300 (III & IV), Karma Mahsuri (V), Akshaydhan (VI) and Jaya (VII) and local check. Hybrid check (in AVT trials only)
4	L	AVT2	IET's 28497, 28501, 28508, 28509, 28538 and 28544 NIL's: IET 29209 (7 Entries)
		AVT1	IET 28440, 29328, 29343, 29345 29347, 29349, 29351 and 28524 (8 Entries)
		IVT	New Nominations
		Checks	Swarna -National; NDR 8002 (Eastern & Central), Ranjeet (North-Eastern), Salivahana (Western), Pushyami (Southern)-Zonal, PA 6444 (Hybrid) and Local check; Samba Mahsuri (RP)
5	BORO	AVT2	-
		AVT1	IET 28840, 28842, 28848, 28849, 28850, 28851, 28852, 28858, 28859, 28864, 28867 and 28876 (12 Entries)
		IVT	new nominations
		Checks	IR 64, Gautam, Rajalaxmi (Hybrid) and Local Check
<b>SALINE ALKALINE TRIALS</b>			
6	CSTVT	AVT2	IET 27847 (H) (only 1 Entry)
		AVT1	-
		IVT CSTVT (E and IM): <100 days DFF:	Checks: CSR 10, FL 478, Local check, Sensitive check (PR114)
		IVT CSTVT (M and L): >100 days DFF:	Checks: Bhuthnath, CST 7-1, Local check, Sensitive check (Pusa29)
7	AL & ISTVT	AVT2	Alkalinity: 28606, 28608 ; 27077(R) (3 Entries) Inland Salinity: 28608; 27823 and 27807, 27077(R) (4 Entries)
		AVT1	29365, 29358, 29356, 29366, 29354, 29364, 29361, 29360 and 29353 (9 Entries)

S.No	Ecology	Trial	Entries promoted for testing in 2021
		IVT	29362 (R) and other new nominations (1+...)
		Checks	CSR 36 (Alkaline), CSR 10 (Early), FL 478 (Saline Tolerant), CSR 23 (Inland Saline), Pusa 44 (Sensitive) and local check
		AL&ISTVT (E and ME)	Checks: CSR 10, CSR 23, Local check, Sensitive check (PR114)
		AL&ISTVT (M and L)	Checks: CSR 36, CSR 27, Local check, Sensitive check (Pusa29)
<b>AROMATIC SHORT GRAIN TRIALS</b>			
9	ASG	AVT2	None
		AVT1	None
		IVT	New nominations + IET29392 (R)
		Checks	CR Dhan 201- National; CR Dhan 202 (Northern, Eastern & Central), AAUDR-1 (Western), MAS 946-1 (Southern)—Zonal; PA 6129 (Hybrid) and Local
<b>AEROBIC TRIALS</b>			
10	AEROB	AVT2	IETs 27937, 28631, 28645, 27951 and 28636 (5 Entries)
		AVT1	IETs 29412, 29427, 29411, 29398, 29415, 29422, 29424, 29405, 29436, 29423, 29421, 29448, 29426, 29446, 29425, 29396, 29410, 29439, 29447, 29430, 29433, 29444, 29431, 29402, 29440, 29420, 29409 and 29394 (28 Entries)
		IVT	new nominations + IETs 29414 (R), 29429(R), 29400(R) (3+.....)
		Checks	CR Dhan 201-National, CR Dhan 202 (Northern, Eastern, North eastern & Central), AAUDR-1 (Western), MAS 946-1 (Southern)—Zonal, PA 6129 – Hybrid check and Local Check
<b>BIOFORTIFICATION TRIALS</b>			
11	Biofort	AVT2	IET 28714 (only 1 Entry)
		AVT1	IET 28703(R), IET 28714(R), IET 28694(R) , IET 28704(R), and IET 28701(R) (5 Entries)
		IVT	new nominations + IET29458 (R) , 29460(R), 29465(R), 29469(R), 29482(R) and 29484(R) (6 +....)
		Checks	Yield Checks: BPT 5204 & IR 64, Micronutrient Checks: Kalanamak & Chittimuthyalu, Hybrid: DRR H3.
<b>MS GRAIN TRIALS</b>			
12	MS	AVT2	IETs 28757, 28746, 28754, 27438 and 28730 (5+....)
		AVT1	IET 29506, 29485, 29489, 29490, 29494, 29502, 29503 , , 29508, 29511, 29514, 29515, 29523, 29526, 29527, 29534, 29535, 29536, 29537, 29538, 29539, 29543 , 29487, 29492, 29495, 29519 and 29524 (26 Entries)
		IVT	new nominations, IET 29015 (R)
		Checks	National -WGL 14 (NC 1), BPT 5204 (NC 2); Zonal- Improved Samba Mahsuri (Northern, Eastern and Central), Ketekejoha (North Eastern), Karjat-6 (Western), ADT-49 (Southern) and Local Check
<b>Phosphorus &amp; Nitrogen TOLERANCE</b>			
13	LPT	AVT2	NILs: IET 27641, 28818, 28816, 28061 (4 Entries)

S.No	Ecology	Trial	Entries promoted for testing in 2021
		AVT1	IETs 28066 (R), 28821(R) and 28065(R), MTU 1010 (RP), KMR 3 (RP) (5 Entries)
		IVT	All entries of IVT LPT of 2020 and new nominations
		Checks	Swarna, Rasi, Improved Samba Mahsuri, BPT 5204, MTU1121 (RP)
14	NPT	AVT2	IET 28084 (only 1 Entry)
		AVT1	-
		IVT	All entries of IVT LNT of 2020 and new nominations
		Checks	Varadhan, Tella Hamsa, Swarna, Rasi, Improved Samba Mahsuri, BPT 5204
<b>HYBRICE RICE TRIALS</b>			
15	Hybrid rice	IHRT E	New Nominations
		Checks	CO-51 (NVC); US 314 (NHC); Zonal - PR 124 (Northern), Narendra 97 (Eastern), Luit (North Eastern), Sahbhagidhan (Central & Western), MTU 1153 (Southern) and local check
16		IHRT ME	New Nominations
		Checks	Gondhra Bidhan-3 (NVC); US 312 (NHC); Zonal - PR 113 (Northern), Lalat (Eastern & North Eastern), Karjat-7 (Western), MTU 1010 (Central and Southern)- (Zonal) and Local Check
17		IHRT M	New Nominations
		Checks	NDR 359 (NVC); HRI 174 (NHC); BIO 799, 28P67 (OHC); Zonal-PR121 (Northern), CR Dhan 300 (Eastern & North Eastern), Karma Mahsuri (Central), Akshaydhan (Western) and Jaya (Southern) and local check
18		IHRT MS	New Nominations
			WGL-14 (NCV-1), BPT-5204 (NCV-2), JKRH-3333 (NCH-1), 27P63 (NCH-2), Zonal - Ketekejoha (North Eastern), Improved Samba Mahsuri (Eastern & Central), Karjat-6 (Western), ADT-49 (Southern)

- Some of the 2019 promoted entries could not be included in 2020 testing as seed was not received due to COVID related issues. Hence, it was agreed upon to include such entries for testing during 2021 depending on receipt of sufficient seed quantity.

### Constitution of Rainfed Trials-2021

#### ICAR-NRRI

S.No	Ecology	Trial	Entries promoted for testing in 2021
<b>Rainfed Trials</b>			
1	E-DS	AVT2	<b>IETs:</b> 28241, 28248,
		AVT1	<b>IETs:</b> 29036, 29038, 29039, 29040, 29044, 29045, 29046, 29047, 29048, 29052, 29054, 29060, 29063 and 29067. <b>Repeat: IETs</b> 28834, 28835 and 28836
		IVT	<b>New Nominations:</b>
		<b>Checks</b>	National: Sahbhagidhan and Vandana; Zonal- Govind (Northern), Narendra 97 (Eastern), Samaleshwari (Central), Varalu

S.No	Ecology	Trial	Entries promoted for testing in 2021
			(Western), Tulasi (Southern); Anjali (Zonal check all Zones); US 314- Hybrid check; Sensitive: Gangavathi Ageti and Local Check.
2	RSL	AVT2	<b>IETs:</b> 28281, 29031, 29032 and 27538
		AVT1	<b>IETs:</b> 29026, 29100 <b>Repeat: IETs</b> 28276, 26744
		IVT	<b>New Nominations:</b>
		<b>Checks</b>	National: Swarna Sub-1; Zonal- Pooja (Eastern), Bahadur (North Eastern), Savitri (Southern); PA 6444 -Hybrid Check and Local check
3	SDW	AVT2	<b>IETs:</b> 28311, 28296, 28299, 28313, 28291 and 28315
		AVT1	<b>IETs:</b> 29114, 29115, 29121, 29122, 29132, 29135,
		IVT	<b>New Nominations:</b> + <b>Repeat: IETs</b> 29111, 29116, 29118, 29119, 29128, 29129, 29134, 29137
		<b>Checks</b>	National: CR Dhan 506, Zonal- Purnendu (Eastern and North Eastern), MTU 1172 (Southern) and Local Check.
4	DW	AVT2	<b>Repeat: IETs:</b> 26741
		AVT1	<b>IETs:</b> 28318
		IVT	<b>New Nominations:</b> + <b>Repeat: IETs</b> 28319, 28320
		<b>Checks</b>	National: CR Dhan 500, Zonal- Dinesh and Local Check.

### Constitution of Basmati Trials-2021 ICAR-IARI

S. No	Ecology	Trial	Entries promoted for testing in 2021
<b>BASMATI TRIALS</b>			
1	BT	AVT2	IETs: 28577, 28579, 28583, 28586 and 28589
		AVT1	28938 <b>Repeat:</b> 28572
		IVT	<b>New Nominations</b>
		<b>Checks</b>	Pusa Basmati-1 (Yield Check), Pusa Basmati 1121 (Yield and Quality check), Pusa RH 10 (Hybrid check), Taroari Basmati (Quality check) and Local check.



## **TECHNICAL SESSION II: DISCIPLINEWISE PLANNING AND FINALIZATION OF TECHNICAL PROGRAMMES FOR 2021-22**

### **CROP PRODUCTION**

**Chairman:** Dr. V. Praveen Rao (VC, PJTSAU)  
**Co-Chairman:** Dr. Himanshu Pathak (Director, NIASM)

**Rapporteurs:** Dr D.V.K. Nageswara Rao, ICARI-IIRR  
Dr Mangal Deep Tuti, ICAR-IIRR  
Dr Padmini Swain, ICAR-NRRI

### **Agronomy**

**Program Leader:** Dr. R. M. Kumar

The Technical session-II of 56<sup>th</sup> ARRGGM was held on 19<sup>th</sup> April 2021 (2:30 PM to 3:30 PM) in virtual mode and about 60 participants joined the discussion. In the introductory remarks, Chairman of the meeting Dr. V. Praveen Rao emphasized on the productivity improvement of rice and the importance of yield gap analysis in different ecosystems for addressing the problems of the small holders. He also pointed out on the resource mapping of rice ecologies and the use of GIS and drone technology in the modern day's data driven agriculture. Whereas Dr. Himanshu Pathak, Co-chairman of the session expressed his willingness to assist in yield gap analysis. Additionally, he suggested to prepare a document on nutrient use efficiency of rice cultivars from past decade's AICRIP research work and application in breeding program.

Thereafter, Dr. R M Kumar presented the proposed Agronomy technical program for 2021-22. The trial-wise recommendations are as follows-

#### **1. Nutrient Management Trial (NMTs): Nutrient response trials of selected AVT-2 rice cultures under optimum and low input management**

National check, Zonal check and local check must be included in the trial

#### **2. Cultural Management Trials**

##### **CMT-1: Development of package of practices for Mechanized Transplanting**

- It was advised to develop/deliver full package of practices stating from selection of seed, nutrient, water, weed management and plant protection.

##### **CMT-2 (Dry DSR): Developing a suitable package of practices for dry DSR**

##### **CMT-3 (Wet DSR): Developing a suitable package of practices for wet DSR**

- It was advised to identify localized problems in DSR and develop solution oriented program as problems of DSR differs with location.

**CMT-4: Yield maximization of rice in different Zones (collaborative trial – Agronomy, Soil Science**

- It was suggested to study the yield gap analysis in consultation with Economist

**CMT5: Enhancing productivity of Organic Rice cultivation (collaborative trial – Agronomy, Soil Science and Crop protection)** (Gangavathi, Karjat, Pattambi, Puducherry, Raipur, Titabar, Chinsurah, Khudwani)

- According to soil science technical program

**CMT-6: Water management for enhancing water use efficiency in different rice establishments methods**

- It was suggested to include of drip and sprinkler system, and water balance data
- Inclusion of IOT based Water monitoring for better scheduling of water in all systems

**3. Weed Management Trials**

- It was suggested to consult the ICAR-DWR to avoid duplication of the trial.

**WMT 1: Long term trial on weed dynamics in mono or double cropped rice system under different establishment methods**

- The trial will be continued

**WMT 2: Evaluation of advanced cultures for weed competitiveness under aerobic rice system**

- The trial will be continued

**WMT 3: Sustainable weed management in aerobic rice system**

- The trial will be continued

**WMT 4: Integrated Pest Management – On farm management of insects, diseases and weeds IPMs (Entomology, Pathology and Agronomy)** (Coimbatore, Chinsurah, Karjat, Kaul, Ludhiana, Malan, Mandya, Navsari, Pusa, Puducherry, Sakoli, Titabar, Vadgaon and Pattambi)

- The trial will be continued

**4. Resource Conservation Technologies in RBCS (RCT)**

**RCT 1: 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** (Vadgaon, Malan, Pattambi, Ghaghraghat, Karjat, Rajendranagar and Titabar)

- It was suggested to modify the treatments

**RCT 2: Evaluation of promising cultivars for late planting and management for higher productivity and mitigate the effect climate change (Collaborative: Breeding and Agronomy)**

**RCT 3: Assessing the performance and yielding ability of Kharif sorghum hybrids and Millets in Rice-based cropping system (Collaborative: ICAR-IIRR and ICAR-IIMR)**

- The trial will be continued

**CRA 1: Analysis of long term meteorological data (temperature and rainfall) for identifying the reasons for yield reduction in different rice based cropping systems**

The trial will be continued

As a part of 56<sup>th</sup> AICRIP workshop, the Agronomy group meeting (71 participants) was also held on online mode on 12th April 2021 (10:30 AM to 1:30 PM) organized by ICAR-IIRR under Chairmanship of Dr. D.K.Singh, Pantnagar and Dr. Sanjoy Saha, NRRI Cuttack. The meeting was convened as a part of ARGM meeting to discuss the results of the trials carried out at different co-operating centers during kharif 2020 and rabi 2019-20, and to finalize the Technical Programme for the coming season (2021). A total of 71 participants including Scientists from Crop Production Division of IIRR, Agronomy co-operators from different location and representatives from private agro-industries attended group meeting.

The meeting was started with the welcome by Dr. R M Kumar followed by the introduction of the Chairman and Co-chairman of the meeting. In the introductory remarks, Chairman of the meeting Dr. D K Singh emphasized the need to reorient the program to address Climate change, residue management, nutrient and water balance. More funds are required for AICRP research (Recurring contingency) which will strengthen AICRP. Whereas Dr. Sanjoy Saha, Co-chairman of the meeting emphasized on reducing the cost of cultivation of rice by minimizing the human work-force with the intervention of mechanization.

Dr. R M Kumar presented the results and summary of Nutrient management trials and Rice Based Cropping System trials. Dr. Mangal Deep Tuti presented the results of Cultural management trials followed by Dr. B. Sreedevi with Weed management trials. This was followed by a short demonstration by Dr. B Sailaja on AICRIP-Intranet online submission of data and analysis. Mallesh Tigali from CultYvate Pvt. Ltd. informed about the IOT based water management and interest in working with Agronomy group. During discussion and finalization of Technical Programme, emphasis was given upon the timely receiving of the NMT seed materials (May 15th) as well as optimum quantity and quality of seed by the co-operating centres for smooth conducting of the trials and generating quality data. Each trial under CMT, WMT and RBCS was discussed in detail. Dr. Ashaq Hussain (Khudwani) suggested for incorporation of details of package of practices to be followed in CMTs especially regarding weed management.

Suggestions from the Chairman, Co-chairman and co-operators were noted for the improvement of the technical program and modifications suggested in the program will be included in the finalization of the Technical program for the year 2021.

**Proposed experiments for both *Kharif* and *Rabi* (2021-22)**

- ✓ Optimum yield / productivity must be 5-6 tonnes per ha in Yield maximisation trails in different centres. The centre where yields are low those centre reports will be off the record. The varieties used for experiment should not be more than 10 years old as local checks
- ✓ Research program mainly to reduce cost by use of herbicides and mechanical weeders and fertilizers and labour.
- ✓ Mechanization in transplanting and direct sowing to reduce cost of production.
- ✓ Use of new herbicides to control monocot, sedges and dicot weeds.
- ✓ In cultural management trials only normal date of sowing and use of micronutrients like Zn and Fe as foliar spray. Use of new products for trials for yield maximisation. Location specific varieties to be chosen for comparison with new varieties.
- ✓ Sampoorana KAU Multimix (Rice) new product from Kerala mixture of Macro and micro nutrients will be supplied to all co-operators in next year for trials.
- ✓ Best package of practice to be developed for each location.
- ✓ Water management system to be developed based on sensors for reduce water use and AWD ( CultYvate- Bangalore).
- ✓ In Long term weed management experiment should be conducted in strip plot design. Data on weed flora should be given by all centre. Entomology and pathology to be involved in weed control trials.
- ✓ In sustainable weed management trial, Raised bed system with one post emergence herbicides application has been suggested.
- ✓ Organic rice experiment will be modified in collaboration with Soil Science
- ✓ Sorghum hybrids to be included in rice based cropping system and data on sorghum yield to be recorded and submitted by centre.
- ✓ Straw management system in resource management to be included .
- ✓ Need to conduct RBCS in both the seasons
- ✓ Generate Pests and diseases data in collaborative trials

(For Agronomy Group meetings – Drs Soumya Saha, Scienstist, ICAR-IIRR acted as rapporteurs).

## **Soil Science**

**Program Leader: Dr. MBB Prasad Babu**

Dr. V. Praveen Rao, Chairman appreciated the work carried out in AICRIP Soil Science Programme and emphasized the way forward in a holistic manner under climate changing scenario. After thorough deliberations, the following technical program for the year 2021-22 was finalized.

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

- Temporal and spatial yield stability to be studied
- Water related parameters like Water holding capacity of the soil to be analysed
- The quantity of FYM in “FYM alone” treatment to be increased from 10 to 15 t/ha during *rabi* season.

**Centers (3): Mandya, Maruteru and Titabar**

### **2. Soil quality and productivity assessment for bridging yield gaps in farmers’ fields**

- Variety, season and ecology-wise yield gaps to be assessed
- Econometric analysis for yield gap estimation to be done with the help of Economist
- **Centers (7): Pantnagar, Pusa, Titabar, Ludhiana, Faizabad, Karaikal, Moncompu**

### **3. Screening of germplasm for sodicity**

- Local and national checks to be added in addition to the test genotypes.
- To consult CSSRI to avoid duplication
- Initial and post harvest soil properties should be reported

**Centers (3): Mandya, Ludhiana, Faizabad**

### **4. Screening of rice genotypes for tolerance to soil acidity**

- Local and national checks to be added in addition to the test genotypes.
- Threshold levels for yield loss to be studied
- Initial and post harvest soil properties should be reported

**Centers (3): Moncompu, Titabar, Dumka**

### **5. Residue management in rice based cropping systems**

- Detailed protocol on Pusa decomposer application to be provided to cooperators
- Treatment schedule on Pusa decomposer to be fine tuned in consultation with IARI
- Quantification of residues added

**Centres (8): Maruteru, Pantnagar, Pusa, Hazaribagh, Karaikal, Puducherry, Khudwani, and IIRR.**

## **6. Enhancing Nitrogen Use Efficiency in rice germplasm**

- Agronomic, physiological and soil-related traits that impart high NUE to be studied
- Various use efficiency indices to be calculated

**Centres (7): Mandya, Maruteru, Pantnagar, Faizabad, Karaikal, Khudwani, Ludhiana**

## **8. Enhancing productivity of Organic Rice cultivation**

- Treatment schedule to be finalized in consultation with crop production group
- Grain quality parameters to be assessed.

**Centres (7): Mandya, Maruteru, Pantnagar, Faizabad, Karaikal, Khudwani, Moncompu**

The Soil Science group comprising of eight cooperators (5 funded & 3 voluntary) and seven Soil Scientists from ICAR-IIRR met on 12th April, 2021 at 14:15hrs under the Chairmanship of Dr. Ch. Sreenivas, Principal Scientist, APRRI, Maruteru, to discuss the results of Soil Science Coordinated Programme conducted during 2019-20. At the outset Dr. M.B.B. Prasad Babu, I/C Program Leader welcomed the group and presented the results of eight trials conducted at 17 locations.

Dr. Subramanyam, Director, ICAR-IIRR joined the group and appreciated the work carried out by the cooperators in the conduct of experiments and timely submission of data during the Covid pandemic scenario. The director stressed upon the quality of the data for proper interpretation of the experimental results. The results presented by the PI were thoroughly discussed in the meeting.

(For Soil Science Group meetng, Drs Manasa, Bandeppa and R. Gobinath, Scientists, acted as rapporteurs)

## **Plant Physiology**

**Programme Leader : Dr. P. Raghuvver Rao  
Dr. Padmini Swain**

The Plant Physiology Group discussed over Mobiles and emails and hereby proposed the following technical programme for the year 2021. However, the comments given by various experts and dignitaries were discussed and would be included in the technical programme from next year. The suggestion received from Dr. H.S. Gupta, Dr. Himanshu Patak, Dr. V. Praveen Rao and Dr. A.K. Singh to strengthen Plant Physiology Programme in AICRIP mode and also at the coordinating unit at ICAR-IIRR are given below.

## **Technical Program of Plant Physiology (AICRIP) Kharif 2021**

Trials to be conducted

1. Influence of Silicon on stress tolerance in rice genotypes:  
11 centres (CBT, CHN, IIRR, KJT, KRK, MTU, PNR, PTB, RANCHI, REWA & TTB)
2. Screening for high temperature tolerance in rice genotypes:  
7 centers (CHN, IIRR, MTU, PNR, PTB, REWA and TTB)
3. Screening of elite rice cultures for drought tolerance :  
7 centers (CBT, NRRI, PTB, REWA, TTB, RPR and RANCHI)
4. Physiological characterization of selected genotypes for multiple abiotic stress tolerance :  
10 centers (CBT, NRRI, FZB, KJT, KRK, MTU, PTB, REWA, TTB, and Ranchi)
5. Screening for submergence Tolerance:  
4 centers (NRRI, PTB CBT and TTB)
6. Screening of rice varieties for tolerance to low light stress :  
7 centers (NRRI, IIRR, KJT, MTU, PNR, TTB and RPR)

### **1: Influence of silicon on induced stress tolerance in rice genotypes**

***Locations: 11 centres (CBT, CHN, IIRR, KJT, KRK, MTU, PNR, PTB, RANCHI, REWA & TTB)***

The experimental lay-out will be split-plot with three replications.

Water stress will be imposed after PI stage by withholding irrigation.

Silicon will be applied as 2.7% Ortho Silicic Acid (OSA) (measured as 0.8% Silicon)

Commercial Name: Silixol

### **2: Screening of elite rice cultures for drought tolerance**

***Locations: 7 centers (CBT, NRRI, PTB, REWA, TTB, RPR and RANCHI)***

A trial to study the drought tolerance traits of rice cultures with respect to yield and other attributes under dry spells will be conducted with 26 rice genotypes taken from IVT-E-DS trial and 5 released varieties during Kharif-2021 at 5 locations will be tested for drought tolerance.

The treatments consisted of two irrigation regimes

- a. Irrigated as per the recommended schedule.
  - b. Rainfed condition without any supplementary irrigation.
- a. Design : 2 Factorial RCBD with 3 replication

### **3: Screening for high temperature tolerance in Rice genotypes Locations:**

**7 centers (CHN, IIRR, MTU, PNR, PTB, REWA and TTB)**

**Objective:** To investigate the differences in the terminal heat stress tolerance in elite rice genotypes.

Design Treatments Fertilizer dose: Split-Plot & K as basal dose): Two (Treated and Control)

N-Splits: 100N- 45P<sub>2</sub>O<sub>5</sub>- 60K<sub>2</sub>O kg/ha. P. Splits 1<sup>st</sup> 50% at 10-15 DAP; 2<sup>nd</sup> 25% at active tillering, 3<sup>rd</sup> 25% at panicle initiation (PI)

The genotypes will be transplanted in two blocks/strips, one for control and another block/strip for imposing terminal heat stress by covering the block/strip with polythene sheet supported by a metal frame or bamboo sticks like a “tunnel” IMMEDIATELY AFTER PI STAGE (before onset of flowering) stage until maturity. Control block/strip should be kept uncovered. Leave at least 10 cm space between polythene sheet for sufficient ventilation. Each entry should be sown in 3 rows of 1.5 meter length maintaining 20 cm spacing between rows and recommended plant to plant distance. Leave one blank row between the entries. Each row will be treated as a replication and all the observations needs to be recorded for each row separately. A minimum-maximum thermometer will be installed inside the tunnel and both minimum and maximum temperatures needs to be recorded everyday inside the tunnel.

### **4: Physiological characterization of selected rice genotypes for multiple abiotic stress Tolerance,**

**Locations: 10 centers (CBT, NRRI, FZB, KJT, KRK, MTU, PTB, REWA, TTB, and Ranchi)**

During kharif-2021 season this trial will be conducted in 7 centres with 18 rice genotype taken from AVT-1-IME set and some genotypes will be taken from the submergence tolerance set obtained from NRRI.

Under this experiment, only laboratory experiments will be conducted to screen the above genotypes with the following treatments

- Salinity stress: Sodium chloride of concentration 200mM (Water potential: - 1.26, PF: 4.11) was used for germinating the seeds. In case of control situations, seedlings were grown in Hoagland's solution and the following observations were recorded in each of these stresses and control grown situations. Shoot & root length (cm) and shoot & root dry weight, leaf chlorophyll content were recorded (Gupta 1998) were recorded during experimental period.
- Water stress (1% and 2% mannitol) stress.



- Anaerobic germination stress.
- Low temperature stress.

## **5. Screening for submergence tolerance in Rice,**

***Locations: 4 centers (NRRI, PTB CBT and TTB)***

Screening using field tanks (wherever available) or in pots

- Before sowing the seeds should be pre-heated at 50 °C for 2-3 days for breaking the seed dormancy (if any).
- The seeds need to be directly sown inside the tanks using wet-bed direct sowing method.
- Each genotype should be sown in 2 rows (min.) with 3 replications with a row to row spacing of 20 cm and plant to plant spacing of 15 cm.
- Germinated seedlings should be grown normally till 20–25 days without submergence stress. 5. Plant height (average of 5 plants/genotype per replication) and number of hills per genotype per replication (total numbers) should be recorded before the imposition of submergence stress.
- Then the plants should be subjected to the submergence stress in the form of standing water, where tanks should be filled with 80-100 cm of water and the level of water must be 20-25 cm above the top of the plant canopy.
- The level of water should be maintained for 14 days after imposition of submergence stress inside the tanks.
- After 14 days of submergence stress, water should be drained out from the tanks (de-submergence), and initially plant height, the number of hills will be counted from the plants.
- Finally, the de-submerged plants should be allowed to grow 5 days in normal condition and the number of survived hills should be calculated for each genotype.
- Same experiment may be conducted in pots of 10 cm size and small cemented tanks. In case of pot experiment, it is better to put 2-day old germinated seedlings in the pot (3 seedlings per pot) with minimum 5 replications, where 1 pot serves as 1 replication. Rest of the protocol is same.

## **6: Screening of elite rice germplasm for low light stress tolerance**

***Locations: 7 centers (NRRI, IIRR, KJT, MTU, PNR, TTB and RPR)***

Light intensity is one of the most important environmental factors that determine the basic characteristics of rice development.

A trial will be conducted in 7 AICRIP centres with 21 entries taken from IVT-SDW trial. Swarnaprabha will be included as tolerant check and IR-8 will be taken as susceptible check.

The trial will be conducted in factorial RCBD design with 3 replications with light regimes as main plot treatment and genotypes as subplot treatment.

Low light treatments will be imposed immediately after transplanting by enclosing the plots in shade-net (50% transmittance). The shade net will be supported by metal/bamboo poles.

The Plant Physiology group meetings was held on 12<sup>th</sup> April, 2021, all the participants from physiology group participated and deliberations were conducted. The Plant Physiology report for the year 2020 was presented by Dr. P. Raghuveer Rao about the achievements and the work done summary.

(For Plant Physiology group meetings Drs Akshay S Sakhare, ICAR-IIRR and Kaushik Chakraborty ICAR-NRRI acted as rapporteurs)

## **TECHNICAL SESSION II: DISCIPLINEWISE PLANNING AND FINLIZATION OF TECHNICAL PROGRAMMES FOR 2021-22**

### **CROP PROTECTION**

**Chairman** : Dr. R Jagdeeswar, Director of Research, PJTSAU  
**Co-Chairman** : Dr. JS Bentur, Ex-head, Entomology, ICAR-IIRR  
**Programme Leader** : Dr. B Jhansi Rani, PI, Entomology  
Dr. M Sreenivasa Prasad, PI, Plant Pathology  
**Rapporteurs** : Dr. Ch Padmavathi, Principal Scientist, Entomology, IIRR  
Dr. D Krishnaveni, Principal Scientist, Plant pathology, IIRR  
Dr. SD Mohapatra, Principal Scientist, Entomology, NRRI

At the outset Dr R Jagadeeswar, Chairman of the session welcomed the participants and gave a brief overview of increasing trend of pesticide use especially the herbicides. He also showed his concern about the increased incidence of gall midge in various locations and whorl maggot in irrigated ecosystems in AP and Telangana. He urged to develop crop-pest-weather calendars for various ecosystems. He suggested developing a thorough management strategy for the cultivation methods (Wet DSR, dry DSR etc) depending on the incidence/severity studies. He also emphasized on the use of data mining technologies to draw valid associations with pest incidence, locations and weather from POS data to develop Apps. Finally, he requested the co-operators to interact and suggest for strengthening the technical program.

### **Entomology**

**Programme Leader** : Dr. B Jhansi Rani

Dr. Jhansi Rani, PI – Entomology presented the technical program for 2021-22 as follows:

- All the existing HPR 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.
- The trial on Insecticides and botanicals evaluation trial (IBET) will continue.
- A new trial on granular insecticide evaluation for gall midge was proposed in search for alternative insecticides effective against gall midge as two (Carbofuran and Chlorpyrifos) are listed to be banned in future

- Ecological Engineering for Management of Insect pests (EEMP) trial and Bio-intensive Pest Management (BIPM) trial will continue under Biocontrol and biodiversity studies.
- Under ecological trials, Effect of Planting Dates on insect Pest incidence (EPDP) was dropped
- Two trials in collaboration with Agronomy, i.e., Influence of establishment methods on pest incidence (IEMP) and Cropping systems influence on pest incidence (CSIP) will continue
- The trial on Evaluation of pheromone blends for insect pests of rice (EPBI) will also continue at selected few locations.
- Integrated Pest Management Special Trial (IPMs) will continue in collaboration with Agronomy, plant pathology and also NCIPM
- Population monitoring of insect pests through Light Trap will continue.
- Pest Survey report will continue on fortnightly basis including online submissions in the provided format.

Dr. JS Bentur, co-chairman suggested to initiate a trial on population monitoring of BPH. He also suggested initiating breeding for gall midge resistance through MAS for rabi season also. He strongly suggested combining both GMS and GMSS trials since the latter does not serve any specific purpose. Also to discontinue GMPM trial as the objectives of estimation of allele frequency is not being met. He suggested including marker component in co-ordinated trials as genes-specific markers are available and urged to generate information on markers in the identified promising lines/entries. He also suggested avoiding application of pesticides up to 30 days after planting in IPMs trial. He opined that the WBPH resistance breeding has to be more focused. He also suggested to re-initiate a common trial on multiple resistance screening of both insect pests and diseases.

A thorough discussion was held on IPMs modules to be followed and with inputs from Dr. Mukesh Sehgal from NCIPM, location specific IPM modules were developed and the same will be used by both IIRR and NCIPM in the IPMs trial across various locations. Dr. Mukesh Sehgal suggested to include green label pesticides in IPMs trial as per the need and not to apply any pesticide after 90 DAT. Dr. GS Laha from IIRR stressed that the source of *Trichoderma* and *Pseudomonas* to be used in IPMs trial should be from one place and accordingly, Dr AK Mukerjee from NRRI agreed to supply for IPMs trial. He also suggested including pesticides having label claim for rice. He mentioned about the cross-activity of herbicides to pathogens and if possible to look into the matter while deciding the herbicides. Dr SD Mohapatra from NRRI suggested making pest monitoring as integral part of IPM with pheromone traps/light traps/sweep net collections. Dr Bishnu Maya from IARI suggested to include the management practices of Bakane in the location specific module of Ludhiana. Many suggestions have come from the co-operators for

inclusion of various non-chemical components like silica sprays, rice husk ash, biochar and botanicals application in IPMs trial.

Dr Ramarao from Bapatla informed the house that the incidence of gall midge was observed at 60 DAT on wards and continued till 80 DAT last year and hence suggested to include the management till 80 DAT. Dr Karthikeyan, ADR from Pattambi suggested to include combination pesticides (Virtago – Chlorantraniliprole + Thiamethoxam) in the proposed new trial on gall midge control. Dr SD Mohapatra from NRRI suggested to look into the population trends of soil arthropods and soil microbes on application of granules.

**The details of location wise Entomology trials allotted are given below:**

***Kharif 2021***

**Planthopper Screening Trial (PHS)**

**Locations: 13**

Aduthurai	Coimbatore	Cuttack	Gangavathi	Jagtial	Ludhiana
Mandya	Maruteru	Nawagam	Pantnagar	R. Nagar	Sakoli
Warangal					

**Gall Midge Screening Trial (GMS)**

**Locations: 12**

Chiplima	Cuttack	Jagdarpur	Jagtial	Maruteru	Moncompu
Nellore	Pattambi	Ragolu	Ranchi	Sakoli	Warangal

**Leaf Folder Screening Trial (LFST)**

**Locations: 20**

Aduthurai	Arundhutinagar	Bapatla	Chatha	Chinsurah	Cuttack
Gangavathi	Jagdarpur	Karaikal	Karjat	Kaul	Khudwani
Ludhiana	Malan	Masodha	Navsari	Nawagam	Nellore
Pattambi	R. Nagar				

**Stem Borer Screening Trial (SBST)**

**Locations: 16**

Aduthurai	Arundhutinagar	Chinsurah	Coimbatore	Cuttack	Ghaghraghat
Malan	Moncompu	Navsari	Nellore	Pantnagar	Pattambi
Pusa	R. Nagar	Raipur	Titabar		

**Multiple Resistance Screening Trial (MRST)**

**Locations: 28**

Aduthurai	Ambikapur	Arundhutinagar	Chatha	Chinsurah	Chiplima
Coimbatore	Gangavathi	Jagdarpur	Khudwani	Ludhiana	Malan
Mandya	Maruteru	Masodha	Navsari	Nawagam	Nellore
Pantnagar	Pattambi	Pusa	R. Nagar	Ragolu	Raipur
Ranchi	Sakoli	Titabar	Warangal		

**National Screening Nurseries-1(NSN-1)**

**Locations: 18**

Chiplima	Coimbatore	Gangavathi	Jagdarpur	Ludhiana	Mandya
Maruteru	Masodha	Moncompu	Nawagam	Pantnagar	Pusa
R. Nagar	Ragolu	Raipur	Sakoli	Titabar	Warangal

**National Screening Nurseries – 2(NSN-2)**

Aduthurai	Chinsurah	Chiplima	Coimbatore	Gangavathi
Jagdarpur	Karjat	Kaul	Ludhiana	Malan
Maruteru	Moncompu	Navsari	Pantnagar	

**Locations: 16**

Ghaghraghat  
Mandya

**National Screening Nurseries – Hills(NSN-H)**

Chatha	Coimbatore	Khudwani	Ludhiana	Malan
Pantnagar				

**Locations: 7**

Maruteru

**National Hybrid Screening Nurseries – (NHSN)**

Chinsurah	Coimbatore	Ghaghraghat	Ludhiana	Mandya
Moncompu	Nawagam	Pantnagar	Pattambi	R. Nagar

**Locations: 12**

Maruteru  
Raipur

**Gall Midge Biotype Trial (GMBT)**

Aduthurai	Ambikapur	Chiplima	Cuttack	Gangavathi
Jagtial	Maruteru	Moncompu	Nellore	Pattambi
Raipur	Ranchi	Sakoli	Titabar	Warangal

**Locations: 17**

Jagdarpur  
Ragolu

**Planthopper Special Screening Trial (PHSS)**

Aduthurai	Coimbatore	Cuttack	Gangavathi	Ludhiana
Maruteru	New Delhi	Pantnagar	R. Nagar	Warangal

**Locations: 11**

Mandya

**Gall Midge Population Monitoring Trial (GMPM)**

Gangavathi	Jagtial	Moncompu	Pattambi	Ragolu
Warangal				

**Locations: 7**

Sakoli

**Planthopper Population Monitoring Trial (PHPM)**

Coimbatore	Gangavathi	Ludhiana	Pantnagar
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**Locations: 4**

**Insecticides Botanicals Evaluation Trial (IBET)**

Aduthurai	Ambikapur	Arundhutinagar	Bapatla	Chatha
Chiplima	Cuttack	Gangavathi	Jagdarpur	Karaikal
Kaul	Khudwani	Ludhiana	Malan	Mandya
Masodha	Navsari	Nawagam	Nellore	New Delhi
Pusa	R. Nagar	Ragolu	Raipur	Ranchi
Titabar	Warangal			

**Locations: 32**

Chinsurah  
Karjat  
Maruteru  
Pattambi  
Sakoli

**Evaluation of Insecticides for Gall Midge Management (EIGM)**

Aduthurai	Ambikapur	Bapatla	Chiplima	Gangavathi
Jagtial	Maruteru	Nellore	Pattambi	Ragolu
Warangal				

**Locations: 13**

Jagdarpur  
Sakoli

**Influence of Establishment Methods on Pest Incidence (IEMP)**

Aduthurai	Chinsurah	Chiplima	Cuttack	Gangavathi
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**Locations: 19**

Ghaghraghat

Jagdalpur	Karaikal	Kurumbapet	Malan	Moncompu	Nawagam
Pantnagar	Pattambi	Pusa	R. Nagar	Ranchi	Ranchi
Titabar					

**Cropping systems influence on Pest Incidence (CSIP)**

Ghaghraghat	Karjat	Pattambi	R. Nagar	Ranchi
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**Locations: 6**

Titabar

**Evaluation of Pheromone blends for Insect Pests of rice (EPBI)**

Aduthurai	Chinsurah	Coimbatore	Jagdalpur	Jagtial
Navsari	Pattambi	Raipur	Sakoli	Titabar

**Locations: 12**

Ludhiana

Warangal

**Ecological Engineering for Planthoppers Management (EPPM)**

Bapatla	Coimbatore	Gangavathi	Malan	Mandya
New Delhi	R. Nagar	Warangal		

**Locations: 7**

Moncompu

**Biointensive Pest Management Trial (BIPM)**

Aduthurai	Bapatla	Chinsurah	Gangavathi	Jagdalpur
Karjat	Ludhiana	Masodha	Moncompu	Pattambi
Ranchi	Titabar			

**Locations: 14**

Karaikal

Raipur

**Integrated Pest Management Special Trial (IPMS)**

Aduthurai	Arundhutinagar	Chinsurah	Chiplima	Cuttack	Gangavathi
Ghaghraghat	Jagdalpur	Karjat	Kaul	Khudwani	Ludhiana
Malan	Mandya	Maruteru	Navsari	Nawagam	Pantnagar
Pattambi	Pusa	R. Nagar	Raipur	Ranchi	Sakoli
Titabar					

**Locations: 25**

**Light Trap Collections (LT)**

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

**Locations: 32**

**Rabi 2021-22**

**Stem Borer Screening Trial (SBST)**

Chinsurah	Coimbatore	Cuttack	Maruteru	Pattambi
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**Locations: 6**

R.Nagar

**Multiple Resistance Screening Trial (MRST)**

Maruteru	R.Nagar
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**Locations: 2**

**Insecticides Botanicals Evaluation Trial (IBET)**

Aduthurai	Chinsurah	Chiplima	Coimbatore	Cuttack
Karjat	Maruteru	Pattambi	Ragolu	Raipur

**Locations: 12**

Gangavathi  
Titabar

**Ecological Engineering for Planthoppers Management (EPPM)**

Aduthurai	Gangavathi	Maruteru	Moncompu
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**Locations: 4**

**Integrated Pest Management Special Trial (IPMS)**

Aduthurai	Chinsurah	Coimbatore	Gangavathi	Karjat
Pattambi	R.Nagar			

**Locations: 7**

Maruteru

The Entomology group meeting held on 8th April, 2021 in virtual mode. At the outset Dr. Jhansi Rani thanked all the co-operators for successful conduct of the trials and timely submission of the data amidst the prevailing covid pandemic. This is followed by presentation of trial wise results. The session was Chaired by Dr. Ajay Shrivastava, Principal Scientist & P.I., Rice & Wheat Research Station, Malan, Himachal Pradesh and Co-chaired by Dr. K Kartikeyan, Professor & PI, RARS, Pattambi, Kerala. Results of the Planthopper Screening (PHS) and Planthopper Special Screening (PHSS); Leafhopper Screening Trial (LFST); other host plant resistance and insect biotype trials; Insecticide-Botanical Evaluation Trial (IBET); Ecological Engineering for Pest Management (EPPM); Bio-Intensive Pest Management (BIPM), Ecological and IPM trials; Light Trap and Pest Survey Reports were presented by the respective P.I.s namely, Drs. V. Jhansi Lakshmi, Ch. Padmavathi, AP. Padma Kumari, B. Jhansi Rani, Chitra Shanker, Ch. Padmavathi, and Y. Sridhar.

During the discussion Dr. NRG Verma, P.S. Agricultural Research Station, Rajendra Nagar, PJTSAU opined that specific mention of seedling tolerance or field tolerance would be useful in planthopper screening trials. Dr. Kartikeyan informed that at Pattambi will be able to screen for different species of stem borers as they occur in good numbers. He did also mention that at reproductive stage pink stem borer is prevalent. Dr. AP Padma Kumari interjected that in case of low pest pressure it is important to augment the pest populations by lab rearing and release. Dr. Kartikeyan informed that case worm is becoming a serious pest and suggested to formulate a trial for its management. Dr. Sujay Hurali, Scientist, Gangavathi, Karnataka expressed the need to formulate a trial for the management of gall midge in view of increased incidence during the past couple of seasons.

Dr. Ajai Shrivastava, Chairman of the session strongly to augment the field population by release of laboratory reared insects if pest pressure is low with respect to host plant resistance trials, He opined that botanicals evaluation trials and biological control trials are important for hills as pesticide consumption in hills is low and state governments are encouraging adoption of non chemical pest management practices. He suggested to include local species in the trials. He said that IPM trials are important as they are being conducted in the farmers' field. He was of the view to give emphasis on



pest survey as it gives pest scenario in the rice crop production. He emphasised to adopt a common light trap for better comparison of the data.

Dr. Kartikeyan, Co-chairman of the session expressed satisfaction over the receipt of more than 90 per cent of the data notwithstanding the covid pandemic and congratulated the P.I.s for their good compilation and presentation. He told to focus on the management of caseworm that is becoming serious, in the nursery and vegetative stages. He opined that IBET models are good and useful and to combine IBET and BIPM trials. He suggested to IPM modules based on the previous data.

Post lunch there was an interactive session with the co-operators. NRRI, Cuttack expressed unwillingness to conduct MRST and IPM trials. Dr. Sujay Hurali, Gangavati emphasised the need for trial on gall midge and stem borer management. Dr. Om Prakash, RARS, Jagityal urged to drop PHSS trial at their centre. Dr. Vinayak Jalgoankar, Karjat informed that Rabi data was not recorded due to covid restrictions. Dr. Preetinder Sarao, Ludhiana requested for more PTB 33 seed material for trials. Dr. Ajai Shrivastava, Malan informed that NSN 2 was not conducted due to late receipt of the seed material. Dr. MS Kitturmath, Mandya requested to send the seed material early in the season. Dr. Jyoti Jacob, Moncompu informed that they have to repeat the field trials after the floods, which has become a regular phenomenon in that region. Dr. Praveen Ghoghari, Navasari raised the issues with the use of AICRIP intranet and late receipt of NSN 2 seed material. Dr. SN. Tiwari, Pant Nagar emphasised the need for improving the quality of packaging material as seed parcels are getting damaged in the transit. He also requested for more seed material for glass house screening. Dr. Kartikeyan, Pattambi drawn attention to the problem of wild boars at the station, not releasing the funds for IPM trials and cut in the centres' budget. Dr. NRG. Verma, Rajendranagar informed that in Rabi, germination is poor due to low temperatures, late and improper condition of the seed material from NRRI for NSN 1 and shortage of funds for salaries by 18 lakhs. Dr. Pudaya Babu, Ragolu informed that funds for contingencies was not received. Dr. Sanjay Sharma, Raipur also opined about the need for improvement in the packaging of seed material. He informed that from NRRI many unwanted entries were sent and wanted an trial to be routed through IIRR. Dr. Sharma told that panicle mite and blood worm in direct seeded rice are becoming wide spread and needs more attention. He recommended including Ambikapur as a voluntary centre for gall midge studies. Dr. Balu Chaudhary, Sakoli informed that samples for pheromone trials were not received and IPM trial was unable to conduct due to covid restrictions. He highlighted the shortage of supporting staff and need for insecticidal trials for the management of yellow stem borer in view of increased incidence. Dr. Mayuri Barua, Titabar wanted the seed material to be sent in the month of June and filling up of one vacant field assistant post.

After the interaction session there was a discussion on the finalization of trials for 2021.

The House congratulated Dr. Ajai Shrivastava and Dr. SN. Tiwari who are due for superannuation before next ARGM and expressed regards for their immense

contributions to the AICRIP Entomology. The meeting ended with the vote of thanks proposed by Dr. V. Jhansi Lakshmi.

(For Entomology Group meetings - Drs. Y. Sridhar, ICAR-IIRR Balu Choudhary, ARS, Sakoli acted as rapporteurs)

## **Plant Pathology**

Dr. MS Prasad, PI- Plant Pathology, presented the technical program for 2021-22 as detailed below:

### **TRIAL 1: SCREENING FOR LEAF BLAST RESISTANCE**

#### **NSN 1 (36)**

Arundhatinagar	Almora	Bankura	Chatha	Chiplima
Coimbatore	Gangavati	Gerua	Ghaghraghat	Gudalur
Hazaribagh	IIRR	Jagdarpur	Jagtial	Kaul
Karjat	Khudwani	Lonavla	Ludhiana	Malan
Mandya	Maruteru	Mugad	Navsari	Nawagam
Nellore	New Delhi	NRRI	Pattambi	Ponnampet
Rajendranagar	Ranchi	Rewa	Umiam	Upper Shillong
Wangbal				

#### **NSN2 (22)**

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Jagdarpur	Jagtial	Malan
Mandya	Maruteru	Mugad	Nellore	NRRI
Pattambi	Ponnampet	Rajendranagar	Ranchi	Rewa
Umiam	Wangbal			

#### **NSN Hills (14)**

Almora	Barapani	Coimbatore	Gerua	IIRR
Imphal (Lamphalpet)	Karjat	Khudwani	Lonavala	Malan
NRRI	Ponnampet	Upper Shillong	Wangbal	

#### **NHSN (27)**

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Imphal/(Lamphalpet)	Jagdarpur	Jagtial
Karjat	Khudwani	Lonavala	Malan	Mandya
Maruteru	Mugad	Nawagam	Nellore	Pattambi
Ponnampet	Rajendranagar	Ranchi	Rewa	Umiam
Upper Shillong	Wangbal			

#### **DSN (27)**

Almora	Bankura	Coimbatore	Gangavati	Ghaghraghat
Hazaribagh	IIRR	Imphal/Lamphalpet	Jagdarpur	Jagtial
Karjat	Lonavala	Malan	Mandya	Maruteru

Mugad	Nawagam	Nellore	NRRI	Pattambi
Ponnampet	Rajendranagar	Ranchi	Rewa	Umiam
Upper Shillong	Wangbal			

## **TRIAL 2: SCREENING FOR NECK BLAST RESISTANCE**

### **NSN 1 (12)**

Bankura	Jagdapur	Jagtial	Lonavala	Malan
Mandya	Maruteru	Mugad	Nawagam	Nellore
Ponnampet	Rajendranagar			

### **NSN 2 (7)**

Bankura	Jagdapur	Mandya	Ponnampet	Umiam
Mugad	Maruteru			

### **NSN Hills (7)**

Almora	Barapani	Imphal (Lamphalpet)	Khudwani
Lonavala	Malan	Ponnampet	

### **NHSN (13)**

Almora	Bankura	Imphal/Lamphalpet	Jagdapur	Jagtial
Lonavla	Malan	Mandya	Maruteru	Mugad
Nawagam	Rajendranagar	Umiam		

### **DSN (13)**

Almora	Bankura	Imphal/Lamphalpet	Jagdapur	Jagtial
Lonavla	Malan	Mandya	Maruteru	Mugad
Nawagam	Rajendranagar	Umiam		

## **TRIAL 3: SCREENING FOR BROWN SPOT RESISTANCE**

### **NSN 1 (19)**

Bankura	Chatha	Chinsurah	Coimbatore	Gangavati
Ghaghrahat	Gudalur	Hazaribagh	IIRR	Jagdapur
Khudwani	Lonavla	Ludhiana	Mugad	Ponnampet
Pusa	Rewa	Sabour	Upper Shillong	

### **NSN 2 (14)**

Bankura	Chatha	Coimbatore	Gangavati	Ghaghrahat
Hazaribagh	Jagdapur	Ludhiana	Mugad	Ponnampet
Pusa	Ranchi	Rewa	Sabour	

### **NSN Hills (5)**

Coimbatore	Khudwani	Lonavala
NRRI	Ponnampet	

**NHSN(15)**

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

**DSN (16)**

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

**TRIAL 4: SCREENING FOR SHEATH BLIGHT RESISTANCE**

**NSN 1 (23)**

Aduthurai	Arundhatinagar	Bankura	Chakdah	Chinsurah
Chiplima	Faizabad	Gangavati	IIRR	Kaul
Ludhiana	Mandya	Maruteru	Moncompu	New Delhi
NRRI	Pantnagar	Patna	Pattambi	Raipur
Titabar	Upper Shillong	Varanasi		

**NSN 2 (17)**

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

**NSN Hills (2)**

IIRR	Pantnagar
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**NHSN (22)**

Aduthurai	Arundhutinagar	Bankura	Chakdah	Chinsurah
Faizabad	Gangavati	IIRR	Kaul	Ludhiana
Mandya	Maruteru	Moncompu	New Delhi	NRRI
Pantnagar	Patna	Pattambi	Raipur	Titabar
Upper Shillong	Varanasi			

**DSN (21)**

Aduthurai	Bankura	Chakdah	Chiplima	Faizabad
Gangavati	IIRR	Kaul	Ludhiana	Mandya
Maruteru	Moncompu	New Delhi	NRRI	Pantnagar
Patna (Dhangain)	Pattambi	Raipur	Titabar	Upper Shillong
Varanasi				

## **TRIAL 5: SCREENING FOR SHEATH ROT RESISTANCE**

### **NSN 1 (12)**

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

### **NSN 2 (4)**

Aduthurai	Pusa	Raipur	Umiam
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### **NSNH (2)**

Karjat	Lonavala
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### **NHSN (11)**

Chinsurah	Karjat	Lonavla	Navsari	Nawagam
NRRI	Pusa	Raipur	Rajendranagar	Titabar
Umiam				

### **DSN (10)**

Aduthurai	Karjat	Lonavla	Navsari	Nawagam
NRRI	Pusa	Raipur	Rajendranagar	Umiam

## **TRIAL 6: Screening for Bacterial Blight Resistance**

### **NSN 1 (27)**

Aduthurai	Arundhutinagar	Chatha	Chinsurah	Chiplima
Faizabad	Gangavati	Gerua	IIRR	Jagtial
Karjat	Ludhiana	Maruteru	Moncompu	Navsari
Nawagam	Nellore	New Delhi	NRRI	Pantnagar
Patna	Pattambi	Port Blair	Raipur	Sabour
Titabar	Varanasi			

### **NSN 2 (15)**

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

### **NSN Hills (4)**

IIRR	Karjat	NRRI	Pantnagar
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### **NHSN (21)**

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

### DSN (23)

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

### TRIAL 7: Screening for resistance to Rice Tungro Disease

NSN 1 (3)	NSN 2 (1)	NSN-H (1)	NHSN (2)	DSN (3)
Coimbatore	IIRR	IIRR	Coimbatore	Coimbatore
IIRR			IIRR	IIRR
NRRI				NRRI

### TRIAL 8: Monitoring field virulence in *Pyricularia oryzae* (30)

Almora	Coimbatore	Gangavati	Gerua	Ghaghrahat
Gudalur	Hazaribagh	IIRR	Imphal (Lamphalpet)	Jagdapur
Jagtial	Karjat	Khudwani	Lonavla	Malan
Mandya	Maruteru	Mugad	Navsari	Nawagam
Nellore	New Delhi	NRRI	Pattambi	Patna
Ponnampet	Rajendranagar	Ranchi	Upper Shillong	Wangbal

### TRIAL 9: Monitoring field virulence in *Xanthomonas oryzae* pv. *oryzae* (26)

Aduthurai	Chatha	Chinsurah	Chiplima	Coimbatore
Faizabad	Gangavati	Gerua	IIRR	Jagtial
Karjat	Ludhiana	Maruteru	Moncompu	Navsari
Nawagam	New Delhi	NRRI	Pantnagar	Patna (Dhangain)
Pattambi	Port Blair	Raipur	Rajendranagar	Sabour
Titabar				

### TRIAL 10: Disease Observation Nursery (13)

Chinsurah	Gangavathi	IIRR	Kaul	Malan
Mandya	Maruteru	Moncompu	Nawagam	Nellore
NRRI	Pusa	Raipur		

### Trail No. 11: Evaluation of fungicides against location specific diseases (38)

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

**Trial No. 12: INTEGRATED DISEASE MANAGEMENT (18)**

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

**Trial 13: Special Integrated Pest Management Trial (Entomology, Plant Pathology and Agronomy) Locations (27)**

Aduthurai	Arundhatinagar	Chinsurah	Chiplima	Gangavathi
Ghaghrahat	Hazaribagh	Imphal (Lamphalpat)	Jagadapur	Karjat
Kaul	Khudwani	Ludhiana	Malan	Mandya
Maruteru	Navsari	Nawagam	NRRI (Cuttack)	Pantnagar
Pattambi	Rajendranagar	Raipur	Rewa	Sakoli
Titabar	Umiam (Barapani)			

**Trial No. 14: Special trial on yield loss assessment due to major rice diseases**

<b>Leaf Blast (4)</b>	<b>Sheath Blight (4)</b>	<b>Bacterial blight (3)</b>
Jagadapur	Gangavathi	IIRR
Malan	IIRR	Maruteru
Mandya	Ludhiana	Moncompu/Pattambi
Nellore	Maruteru	Pantnagar

**PRODUCTION ORIENTED SURVEY-2021**

Aduthurai	Chakdah	Chatha	Chinsurah	Coimbatore
Faizabad	Gangavati	Gerua	Ghaghrahat	Hazaribagh
IIRR	Jagtial	Karjat	Kaul	Khudwani
Ludhiana	Malan	Mandya	Maruteru	Moncompu
Nawagam	New Delhi	NRRI	Nyra (NRRI)	Pantnagar
Patna (Dhangain)	Pusa	Raipur	Rajendranagar	Rewa
Sakoli				

The Plant Pathology group meeting was held virtually on 9<sup>th</sup> April 2021. Dr. M. Srinivas Prasad, PI, Plant Pathology welcomed the participants and congratulated the co-operators and given the brief presentation about AICRIP trials conducted during Kharif 2020. He informed the house, that total of 541 experiments of 15 trials were conducted at 49 locations (34 funded centres and 14 voluntary centres) including IIRR. The session was chaired by Dr. Arup Mukharjee, Principal Scientist, NRRI and co-chaired by Dr. Kalyan K Mandal, Principal Scientist, IARI. In introductory remarks, Dr. Subrahmanyam, Director, IIRR appreciated the AICRIP Plant Pathology team for bringing out the Plant Pathology report in time and all the cooperators for successful conduct of trials despite the Covid-19 pandemic. PI made point that during Kharif 2020 trials, based on the previous year recommendations, monogenic lines were included in virulence monitoring

of blast pathogen and new trial was conducted to study the yield loss trial on major pathogens. PI requested NRRI and IARI centres to share any other monogenic differential lines to include in the virulence monitoring program. PI also discussed in detail about the host plant resistance of different diseases, disease pressure at different centers and discussed about the management trials conducted.

Chairman of the session, Dr. Arup Mukharjee presented the report of AICRIP upland trials. The Co- chair Dr Kalyan K Mandal, briefed about the basmati rice trials and results of consolidated report on Basmati rice. He also insisted about the importance about the documentation of data with respect to yield losses caused by different rice diseases. Observations of production oriented survey report were presented by Dr. GS Laha. The scientists from IIRR, Dr. D Krishnaveni, Dr. D Ladhalakshmi and Dr. V Prakasam, discussed with the co-operators and insisted to follow the uniformity in recording the observations as per the technical programme. Dr. Mukesh Sehgal, Principal Scientist, NCIPM also participate in the meeting and appreciated the ongoing trials under AICRIP and integrated disease management trials. He also briefed about his work and association with rice farmers in eastern India and validation of rice IPM modules.

Co-operators *viz.*, Dr. Ghosh (Bankura), Dr. Vijay Bahadur Singh (Chatha), Dr. Pushpa Patil (Karjat), Dr. Mahaveer Singh (Kaul), Dr. Fayaz Ahmad (Khudwani), Dr. Bhuvaneshwari (Maruteru), Dr. Vijay Patil (Navsari), Dr. B. Karshiing (Upper Shillong), Dr. Bijendra Kumar (Pantnagar), Dr. Rakesh Kumar Gangwar (Navasari) and Dr. RK Ranjan (Pusa), Dr. Rini Pal (Chiplima) and Dr. Pramesh (Gangavathi) presented brief report of Plant Pathology trials conducted at their respective locations. Dr. Mahendra Kumar, PS and PI of AICRIP Agronomy trials and Dr. CH. Padmavathi PS from IIRR interacted with Plant Pathology co-operators regarding the collaborating trials with agronomy and entomology. Chairman in his concluding the remarks, requested the cooperators to take at most care while recording the data on host plant resistance. Group meeting ended with vote of thanks by Dr. D. Krishnaveni (PS, IIRR).

(For the Plant Pathology Group meetings, Drs Drs. D. Ladhalakshmi, V. Prakasam, K Basavaraj and GS Jasudasu, acted as rapporteurs)



## **SPECIAL SESSION I: IRRI - ICAR Collaborative Programmes**

**Chairman** Dr A. K. Singh, Director, ICAR-IARI  
**Co-Chairman** Dr Jean Balie, DG, IRRI  
**Rapporteurs:** Dr S. K. Dash, ICAR-NRRI  
Dr C. Gireesh, ICAR-IIRR  
Dr M. S. Anantha, ICAR-IIRR

The special session on IRRI – ICAR Collaborative programme during 56<sup>th</sup> ARGM was held on 20<sup>th</sup> April 2021 at 10 AM on virtual mode. Dr. A. K. Singh, Director, ICAR-IARI, New Delhi was Chairman and Dr Jean Balie, DG IRRI was Co-Chairman of the session. Dr. Ranjitha Puskur, IRRI India Office, New Delhi welcomed the participants, speakers and briefed about the IRRI-ICAR Collaborative programme. Directors of ICAR-IRRI and ICAR-NRRI were also participated in the session.

Dr Jean Balie, DG IRRI briefed about the importance of IRRI–ICAR Collaborative programme. He mentioned that rice is livelihood for millions of people and highlighted the importance of strong collaborative research network to cater the needs of stakeholders. He appreciated the efforts of ICAR in serving rice farmers in India and also globally. He mentioned that since the inception of IRRI, it has strong and historic collaboration with India for technology dissemination. He also highlighted the role of IRRI in green revolution for achieving the self-sufficiency in rice production. He described about the breeding strategies to broaden the genetic base and to improve nutrition in rice. He highlighted the importance of establishment of IRRI center at Varanasi and Hyderabad, India and promised that this center will cater the needs of rice research in India. The importance of precision agriculture, knowledge on new varieties, HRD, remote sensing was described. He appreciated the efforts of ICAR in India to popularize DSR and fine tune the technology. He stressed that the new rice varieties with high nutrition, high antioxidants will help in overcoming mal nutrition. He also emphasized the potential of Rice Fallow system which covers huge area in eastern and north eastern states of the country. Progress in use of combined harvester, reapers, use of solar dryers and other post harvest mechanization will help the farmer to reduce drudgery in rice cultivation. He also stressed the importance of private public partnership in taking the technologies to farmers. Sustainable rice production management practices and reduction of methane is also prime area to address during technology invention. He emphasized the importance of mobile based apps for seed distribution and technology transfer. Recent approach of ONE CGIAR approach will help to use the resources effectively, leads to unified governance, institutional convergence, better funding and will be a new way of organizing transformative research programme. He concluded with highlighting five impact areas to be addressed like, food and nutritional security, climate change, environmental sustainability, prosperity and livelihoods, empowerment of women and youth.

Dr Ranjitha Puskur coordinated the IRRI – ICAR Collaborative workplan. She briefed about three important projects under this programme. She highlighted that there are

seven product profiling have been identified for India; three for irrigated ecology and four for DSR. She explained seed system, insect pest resistance, 500 on farm trials conducted to evaluate more than 20 new varieties developed. Six varietal cafeteria organized with several cultures tested under AICRIP.

Dr Dipankar Maiti, Director ICAR-NRRI briefed the important areas to be addressed in rice research like capturing the natural evolution present in the form of landraces, arranging brainstorming session for breaking the yield barrier, work on important biotic stresses like false smut, BPH, arranging the millers meet to convince them about the new varieties, issues to address rice fallow cultivation.

Dr. D. Subrahmanyam, Director ICAR-IIRR emphasized the importance of sustainability of rice production system through improving nitrogen and water use efficiency, widen the genetic base, training of more number of scientists in cutting edge technology. He quoted the work of Dr C. Gireesh to identify and introgress disease resistance using wild introgression and prebreeding.

Dr. Sankalp Bhosale and Dr. Vikas K. Singh have presented ONE RICE breeding strategy adopted by IRRI to achieve higher genetic gain with limited period. Dr Vikas K Singh briefed about the details of one rice breeding through MAS driven selection and genomic selection. They also explained that IRRI identified nearly 24 product profiles globally and 7 for India. The Chairman of the session Dr A K Singh asked about the product profiles of other countries for which India can target the market and export to those countries. Knowing product profile of global market is important as India occupied first position in rice export globally.

Dr Nese Sreenivasulu presented the topic Rice and Nutrition – Myths and Truths. He explained about the importance of balanced diet globally to address malnutrition and obesity. The rice grain composition, proportion of starch, protein was explained in brief. He also emphasized the importance of Glycemic Index (GI), components associated with GI and identification of genomic regions on Chromosome 6 through GWAS associated with GI. Red rice with high antioxidants with soft textures and low GI were also identified for health benefits. It was highlighted that through use of specific rice, we can reduce diabetics, growth of cancerous cells and other non communicable diseases. He explained the needs of good association of rice researchers with scientists of food and nutrition and also with health workers.

Dr. Pavan Kumar Yeggina presented the topic “GIS and RS based mapping application for monitoring rice-fallow and crop losses for the insurance coverage”. He covered the geospatial techniques for mapping and characterizing the rice fallow areas in Assam and Odisha. Satellite based rice monitoring system and ground data have high accuracy of 87-95% in different districts. He briefed about the crop insurance schemes in Odisha in which selected 15 districts of Odisha were studied. It took 3-6 months for farmers to realize the insurance amount from the scheme. He highlighted the ways to identify rice ecologies suitable for DSR cultivation through GIS.

Chairman enquired about the status of haplotype breeding in India. Dr Vikas Kumar Singh who is handling DBT project on identification of superior haplotypes and haplotype breeding, briefed that 19 research institutes are working for different biotic and abiotic stress tolerance. After thorough phenotyping, superior haplotypes will be identified and will be used for MAS.

Chairman enquired about the progress of Hybrid Rice Development consortium. Dr Jauhar Ali explained that 170 elite lines of hybrid rice are shared with private companies during 2020, but could not materialize for ICAR/SAU institutes. The Chairman suggested to revamp HRDC and work aggressively to harness the benefits of hybrid rice technology. He also suggested to map Punjab, Haryana and other states through GIS for obtaining information on rice production system. He appreciated the work done by Dr Nese Srinivasulu, IRRI on rice nutrition, Glycemic Index and protein and suggested to share material of low GI lines with Indian partners. Dr. B.C. Viraktamath member of PAMC, suggested to obtain high zinc lines developed at IRRI in Indian rice breeding programme. Dr Y P Singh, ADG (ICAR) gave his brief remarks on the session. Finally, the session ended with vote of thanks by Dr. D. Subrahmanyam, Director, ICAR-IIRR.

## **SPECIAL SESSION II: Impressions and Recommendations of QRT**

**Chairman : Dr A.K. Singh, Director, ICAR-IARI**  
**Co Chairman : Dr D.K. Yadava, ADG (Seeds)**  
**Dr Y.P. Singh, ADG (FFC)**

Dr H.S. Gupta, Chairman, QRT (ICAR-IIRR & AICRIP on Rice 2012-2020) and Former Director General, Borlaug Institute for South Asia (BISA) made a presentation 'Impressions and Recommendations of QRT' on 20.4.2021 AN for the benefit of all the delegates attending 56<sup>th</sup> ARGM.

He has highlighted the major outputs during the QRT period i.e., highest production of rice (117.94 MMT during 2019-20) and release of large number of rice varieties as well as hybrids, surplus production of breeder seeds, identification and development of multiple biotic stress resistant varieties etc.,

He complimented the AICRIP system for enabling India to become the largest exporter of rice and phenomenal raise in export earnings. However, he expressed concern about the slow annual increase in rice production and productivity in the country.

He opined that the following constraints are impeding the desired progress of AICRIP: slow annual growth rate in the rice productivity with wide fluctuations; preponderance of SVRC releases & low rate of dissemination in the concerned states; 20% of the AICRIP centers are poorly performing; comparatively low efficiency of AIRIP on rice with AICRIP on wheat; low input use efficiency; shortage of contingency funds at voluntary centers; shortage of technical staff, fifty year old glass houses, godowns and other infrastructure at IIRR HQ as well as several centers; inordinate delay in replacement of vehicles; low incentive for outstanding performance etc.,

He has highlighted the roadmap and strategies to achieve the rice production targets of 130 MMT by 2030 and 168 MMT by 2050. He recommended more efforts and focus on Zone III & V for increasing the rice production and productivity. At the same time, he opined that rice cultivation in Zone II (Haryana, Punjab & Rajasthan) needs to be discouraged (due to over exploitation of ground water) and replace with suitable alternative crops.

He has given the following recommendations for improvement of IIRR and AICRIP:

1. Intensify efforts on pre-breeding through utilization of wild species of rice including tertiary gene pool. Broaden the genetic base including use of multiple stress tolerant/resistant lines in crossing programs.
2. Breeding for higher genetic potential (10 t/ha) in 4 mega environments: irrigated; shallow low land; boro and rain-fed lowland
3. Perfection of dry seeding technology to save 40% water. Diversify 2 Mha by 2030
4. Management of false smut & rice blast pathogen to check wheat blast in AICRIP

5. To channelize the resources for effective output, establish **one 'Center of Excellence' in each zone**. This center should focus on specific trait improvement relevant to their ecology and region as delineated by AICRIP
6. Based on consistent POOR performance – some centers proposed to be dropped and new ones started WITHOUT ANY CHAGE IN MANPOWER
7. Voluntary centers to be given higher allocation of contingency
8. Hand holding of weak centers
9. Allocate at least 50% of the FLDs to the AICRIP centers in eastern, north-eastern and central India. NRRI, Cuttack mandated to work in rain-fed ecology should become a major partner in conjunction with other centers of AICRIP in eastern India

## **GENERAL**

10. Establish an AICRIP Co-ordination cell and a Rice-wheat consortium to address the problems of stubble burning of rice in North India
11. Develop a standard Format for SVRC release, AICRIP coordinator or his representative should be invited to the meeting
12. Hold a joint meeting of Directors and Heads of the divisions of IIRR and NRRI under the chairmanship of DDG (Crop Science) once a year to prioritize research, sharing of responsibilities and avoid duplications in research. A joint QRT for both the institutions (IIRR, NRRI & AICRIP) will make rice research more efficient and if that's not possible the same committee may be entrusted with the responsibility

## **INFRASTRUCTURE**

13. Urgent renovation of glass houses, seed godowns & other infrastructure facilities that are fifty-year-old
14. Shortage of Technical Manpower- Provision of Young Professionals In lieu of Technical staff
15. Finance wing to be more active in settling accounts especially with centers in NE Region
16. Replacement of vehicles

He has recommended to withdraw the AICRIP centers viz., Upper Shillong-Meghalaya), Kohima-Nagaland (**Zone I (Hills)**; Kanpur-U.P.) (**Zone II (North)**); Pusa-Bihar (**Zone III (East)**); Wangbal (Manipur) **Zone IV (North- East)**; Tuljapur-Maharashtra (**Zone VI (West)**); Brahmavar and Mugad-Karnataka (**Zone VII (South)**), **because of their poor and unsatisfactory performance**. He also has recommended for opening of the new centers viz., CAU-Barapani-Meghalaya), Nagaland University-

Nagaland (**Zone I (Hills)**); Sabour-Bihar), Darifa-Jharkhand), Pundibhari-West Bengal), Basuli-Eastern UP (**Zone III (East)**); CAU Impal-Manipur (**Zone IV (North-East)**); Lonavala –Maharashtra (**Zone VI (West)**); Nellore-Andhra Pradesh **Zone VII (South)**.

In his concluding remarks, he opined that

1. IIRR & AICRIP together have done a commendable job but there exists enormous scope for further improvement that will translate in the outcome by meeting the targets which are dynamic though.
2. Rice area should be reduced to 42 m.ha. in 2030 & 40 m.ha. in 2050
3. Infrastructure is ~50 yrs. old and needs renovation
4. Dissemination of technology to be strengthened in Central and Eastern zones
5. Value chain & export of Red/black rice to be strengthened
6. International Collaborations e.g. CGIAR centers should align their research priorities with those of the host country and train scientists in latest technologies. Varanasi center of IIRRI should shoulder specific responsibility for assistance in research relevant to eastern India.
7. Business as usual will not do - bring in disruptive changes
8. If right assistance is provided at right time, IIRR & AICRIP – a time tested institution, can turn around rice research of India.

In the ensuing discussion, the following issues were highlighted:

1. In the State Varietal Release Committee meetings, the Director, ICAR-IIRR (representing ICAR) or his nominee has to be essentially be included as member of SVRC to ensure proper scrutiny of the proposal.

While comparing the rice and wheat productivity scenarios, it is important to note that in case of rice productivity, it's milled rice status is considered, where as in wheat productivity, raw grain status is considered.

## **PLENARY SESSION**

**Chairman :** Dr A.K. Singh, Director, ICAR-IARI  
**Co Chairman :** Dr Y.P. Singh, ADG (FFC)  
Dr D Subrahmanyam, Director, ICAR-IIRR  
Dr D Maiti, Director, ICAR-NRRI  
**Rapporteurs :** Dr S. K. Pradhan, ICAR-NRRI  
Dr A.S. Hari Prasad, ICAR-IIRR  
Dr J. Aravind Kumar, ICAR-IIRR

The session was started by presentation of technical program for 2021-2022 by Dr AVSR Swamy, PI-AICRIP (A), Crop Improvement. A comprehensive view on the entries tested, trial conduct and results of the AICRIP testing 2020-2021 were presented. The most important recommendation was that the issues/suggestions provided by DG, ICAR to be addressed as a priority and presented as action taken report (ATR) during next AICRIP workshop. The Chair suggested that the statistical analysis of the trials could adopt F test, CD and CV% (5 to 20%). It was also suggested that IIRR should take up stability analysis of entries on their performance and suitability.

- ✓ The technical program for Hybrid Rice was presented by Dr A S Hari Prasad. It was suggested by the chair that there should be better coordination between ICAR (IIRR as nodal agency) and IRRI in obtaining/exchange of male sterile lines developed.
- ✓ Drs R Mahendar Kumar and MBB Prasad Babu presented the Agronomy and Soil Science technical program respectively for 2021-2022.
- ✓ Dr Jhansi Rani presented the technical program for entomology section. A special trial for gall midge and case worm was initiated. Further, it was suggested to add Ambikapur as voluntary center for entomology trial. The chair suggested that there should be an action plan for the use of multiple resistant lines identified for different pests. The chair also suggested that these important sources of multiple resistance to be adopted in breeding programs in coordination with the crop improvement section.
- ✓ The technical program for Pathology was presented by Dr MS Prasad. Dr Sridhar, Member QRT suggested that selection of tolerant/resistant material to be based on a score of 3 to 5. He also suggested that selections based on absolute resistance could cause emergence of mutant forms of pests/disease with higher disease incidence. It was suggested that the plant protection trials to be screened under artificial conditions in order to create the required disease pressure. Further, a combined trial of entomology and pathology was suggested for identification of material with multiple disease/pest tolerance. The chair suggested that common isogenic lines for all the multiple genes of resistance to be developed in a common high yielding background.
- ✓ Dr P Raghuveer Rao presented the results and technical report of Plant Physiology trials.
- ✓ The meeting ended with 'Vote of Thanks' proposed by Dr R Mahender Kumar, Co-Convener of 56<sup>th</sup> ARGM.

**Proceedings of 8<sup>th</sup> Annual Hill Rice workshop  
ICAR-Indian Institute of Rice Research, Hyderabad  
(24 - 25 February 2021)**

The meeting of 8<sup>th</sup> Annual Hill Rice workshop was conducted on 24<sup>th</sup> and 25<sup>th</sup> February 2021 on virtual mode organized by ICAR-IIRR, Hyderabad. Dr T. R. Sharma, DDG (Crop Science) ICAR chaired the session and Dr Y P Singh, ADG (FFC) ICAR, Co-chaired the session. Dr D Subrahmanyam, Director (Acting), ICAR-IIRR) Coordinated the workshop. Dr AVSR Swamy, Principal Scientist (Plant Breeding) and PI (In charge), AICRIP, Heads of other disciplines including scientists of Plant breeding dept of ICAR-IIRR, Hyderabad and that of different AICRIP cooperating centres (Hill ecosystem) participated in the workshop.

Dr. D. Subrahmanyam, Director (Acting), ICAR-IIRR welcomed the delegates for the meeting. In his introductory remarks he mentioned that in hill ecosystem sowing season starts early in the month of march. Hence every year hills' workshop is being organized by ICAR-IIRR, Hyderabad in the month of February to review the work done compared to main AICRIP workshop which is scheduled in April. The early conduct of hills' group meeting facilitates the finalization of entries promoted and nomination of new entries as well as finalization of technical program for the ensuing year in hill centres.

Dr. A.V.S.R. Swamy, PI (In charge), AICRIP for varietal improvement presented the consolidated progress report on hill rice trials carried out during Kharif, 2020. It was followed by centre-wise presentations across elevations made by the respective cooperating scientists. The presenters included Dr. Sofi (Khudwani), Dr. Mayank Rai (ICAR-Barapani), Dr. Neelam Bharadwaz (Malan, Sundernagar and Bajoura), Dr. Bhuvaneswari (Lamphalpet) and (Dr. Surender (Sirsi). The rest of the centres namely Almora, Wangbal and ICAR-Umiam, Ponnampet could not attend the meeting and DDG (Crop Sci) suggested Dr. D. Subramanyam, director (Acting) to conduct a separate meeting on the follow up day (25<sup>th</sup> Feb) and review the progress of those centres. On 25<sup>th</sup> Feb a separate virtual meeting was conducted for those centres who could not present their findings on 24<sup>th</sup> Feb. Except Wangbal centre other centres namely ICAR-Umiam (Dr. Amit Kumar), Almora (Dr. Chandan Maharana) and Ponnampet (Dr. Sessaiah) presented the experimental results. The minutes of the meetings are mentioned hereunder.

- Although the trials were sent to 21 locations, data was received from 13 centers indicating 55.4% of data receipt (Funded 68%, Voluntary 50.8%) on the whole.
- Chairman insisted to list out the centers for not conducting the trial and not sending the data along with reasons
- It was emphasized to maintain the recommended plot size (IVT-10m<sup>2</sup> and AVT-15m<sup>2</sup>) while conducting trials since it was not followed in many of test centres.
- PI, AICRIP reiterated that all the cooperating centers should send seed of new nominations (2021) on or before 5<sup>th</sup> March without delay so that seeds can be packed at the coordinating centre (IIRR, Hyderabad) and dispatched which in turn



facilitates timely sowing at hill centres. This practice has to be followed without fail.

- It was informed that 01 kg seed of each of the promoted entries from IVT trials to AVT trials should be directly submitted to PIs, AICRIP of Entomology, Pathology and 6-8 Kg seed of AVT-2 entries to PI, Agronomy in the month of March. This will enable in quick dispatch of National Screening Nursery-Hills (NSN-H) for screening against pests and diseases as well as nutrient variety trials.
- It was considered to repeat testing of the entries IET 28210 in AVT 1- M(H) and IET 27468 in AVT- 1E-H based on the request made by the respective breeder.
- The chairman insisted the coordinating centre (IIRR, Hyderabad) to take a decision on recipient parents as well as donors to be utilized as well as the number of crosses to be made by each centre in consultation with the centres as well as considering the local preferences of farmers. Mega varieties grown in hill centres or pre released cultures which are in pipeline should be used in crossing programme as recipient parents so that they won't get outdated at the time of release.
- The chairman suggested to focus on collection, characterization and identification of potential donors possessing novel traits among land races as well as accessions of wild species at each centre. These can be registered as novel germplasm /genetic stocks with NBPGR .
- The Chairman appreciated the performance of good centers and opined that the funds have to be diverted from poor performing centres to the best performing centres looking at the poor receipt of data in some of the locations and consideration may be given for dropping of centers which are under performing in the past consecutive years.
- He encouraged to integrate Marker Assisted Selection (MAS) and other genomic approaches wherever required in the ongoing conventional breeding programs by cooperating centers in collaboration with different disciplines of the universities and nearby ICAR institutes.
- Chairman insisted to increase the funding under Tribal sub plan (TSP) and distribute to centers having more of Tribal population particularly in north east hill region. Eligible centres should send appropriate proposals to ICAR-IIRR seeking grant of Tribal sub plan
- The chairman suggested to publish the research work in good impact factor journals.
- Co-chairman suggested including Agronomic trials focusing Jhum/shifting cultivation.

The meeting ended with vote of thanks proposed by Dr. G. Padmavathi, Pr. Scientist, Plant breeding dept, ICAR-IIRR.

## **RECOMMENDATIONS & ACTION POINTS**

1. Funded centres should take utmost care while conducting the trials and furnishing data. The centres that failed to conduct as well as provide trial data should be dropped from AICRIP system.
2. It is required to set up benchmark yield levels ecosystem-wise and the entries with yield levels above the bench mark should only be promoted.
3. Production Oriented Survey (POS) has to be utilized while formulating action plan of AICRIP. A review would be made in the forthcoming Annual Rice Group Meeting for examining the percolation of POS in action plan.
4. Nitrogen use efficient rice lines must be integrated into breeding programs to generate high yielding elite lines insulated with high nitrogen use efficiency. Similarly export oriented research in sticky rice should be initiated in AICRIP to expand the export potential.
5. A critical analysis has to be undertaken in AICRIP - Soil science to formulate the trials for estimating the effect of Nano fertilizers and silicon spray in saving 20 to 30% of fertilizer usage.
6. It is necessary to introgress a combination of resistant/tolerant genes/QTLs for various biotic and abiotic stresses keeping in view the requirement of target locations while developing MAS products.
7. It is essential to identify and release crop production and crop protection technologies in addition to varietal technologies during AICRIP workshop followed by awarding certificates to the centers/Scientists for the technologies.
8. The novel genetic stocks exhibiting moderate resistance particularly for complex pests and diseases such as BPH, WBPH and False smut should also be registered with NBPGR as donors since they confer durable and stable resistance.
9. There is need to quantify the benefits of water saving technologies like aerobic rice, Direct Seeded Rice (DSR) and Alternate Wetting and Drying (AWD) in terms of saving labour and water compared to conventional transplanting. It is suggested to estimate the yield penalty, if any and how we manage the yield penalty in these water saving technologies.
10. It was suggested to prepare documents on yield gap analysis and nutrient use efficiency of rice cultivars from past decade's AICRIP research work and application in breeding program.
11. To formulate research programs mainly to reduce production cost by use of herbicides and mechanisation in direct seeding/ transplanting, weeding, harvesting and other operations.

12. Majority of centres are evaluating the AICRIP entries against insect-pests and diseases under natural /artificial inoculation conditions. It was suggested that the artificial inoculation and creating sufficient insect-pest load or disease pressure is compulsory in screening trials under field or poly-house conditions.
13. Establishment of misting facility for Uniform Blast Nursery (UBN) at AICRIP centres and Rapid Diagnostic Kits for major diseases need to be developed
14. Generation of new crop protection technologies and broadening of genetic base to identify the sources of resistance (Phenotypically / Molecular) to major insect pests/diseases (Donors / Wild relatives) duly taking into consideration the changed climate scenario.
15. AI-based crop pest / disease detection system using a different convolution neural network (DCNN) to develop decision support system need to be explored, especially using POS data.
16. Identification of new and stable multiple resistance lines / genotypes against biotic stresses (BPH, WBPH, Stem borer, gall midge, Blast, BLB and Brown spot) and study on insect-pests and diseases dynamics in different cultivation systems like direct (wet and dry) seeded rice, dry converted to wet etc.

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## Proceedings of the Varietal Identification Committee Meeting

Varietal Identification Committee (VIC) Meeting on virtual mode was held on 8<sup>th</sup> June 2020 under the chairmanship of Dr TR Sharma, DDG (Crop Science), ICAR. The members of the Committee are listed in the Annexure “A”. There were a total of 38 proposals including 33 varietal entries and 5 hybrid entries as given below.

### List of VIC Proposals received for 56<sup>th</sup> ARGM 2021

#### I. Varieties:

S. No	IET No	Designation	Submitted by	Variety/ Hybrid
1.	27905	NP 9968	Nuziveedu Seeds Ltd.	Variety
2.	27892	RCPR 58-IR 93827-29-1-1-3	ICAR Research Complex for Eastern Region, Patna, Bihar.	Variety
3.	27869	Telangana Vari 4 (JGL 25958)	Regional Agril. Research Station, Polasa, Jagtial (PJTSAU)	Variety
4.	27914	CRR 807-1	ICAR-Central Rainfed Upland Rice Research Station (ICAR-NRRI), Hazaribag	Variety
5.	27920	AD 16028	Tamil Nadu Rice Research Institute (TNAU), Aduthurai	Variety
6.	27883	CR Dhan 318 (CR 4009-4-2- GSR IR1-DQ 138-LI1-Y1)	ICAR-National Rice Research Institute, Cuttack.	Variety
7.	26126	Kalinga Dhan 1201 (OR 2512-5)	Odisha University of Agriculture & Technology, Bhubaneswar Odisha.	Variety <b>(Resubmission)</b>
8.	27280	DRR Dhan 59 (RP 5989-47-15-11-1-126-2-13-11)	ICAR- Indian Institute of Rice Research, Hyderabad.	MAS Variety
9.	26819	MTU 1212	Regional Agril. Research Station, Maruteru (ANGRAU)	Variety <b>(Resubmission)</b>
10.	27705	MTU 1280	Regional Agril. Research Station, Maruteru (ANGRAU)	Variety
11.	26024	Kalinga Dhan 1301 (OR 2573-15)	Odisha University of Agriculture & Technology, Bhubaneswar, Odisha.	Variety <b>(Resubmission)</b>
12.	25530	CR Dhan 319 (CR 3561-3-2-1-1-1-1)	ICAR-National Rice Research Institute, Cuttack.	Variety
13.	28784	DRR Dhan 58 (RP 6287-188-45-12-88)	ICAR- Indian Institute of Rice Research, Hyderabad.	MAS Variety
14.	28801	DRR Dhan 61 (RP 6298-FG3G-12-5)	ICAR- Indian Institute of Rice Research, Hyderabad.	MAS Variety
15.	25419	HUR 156 (Malviya Sugandhit Dhan 156)	Banaras Hindu University, Varanasi.	Variety <b>(Resubmission)</b>
16.	26431	YNP 7023	Yaganti Seeds Pvt. Ltd.	Variety
17.	26171	DRR Dhan 57 (RP 5601-283-14-4-1)	ICAR- Indian Institute of Rice Research, Hyderabad	Variety
18.	27118	MTU 1263	Regional Agril. Research Station, Maruteru (ANGRAU)	Variety <b>(Resubmission)</b>

S. No	IET No	Designation	Submitted by	Variety/ Hybrid
19.	28061	DRR Dhan 60 (RP 5970-2-6-19-16-24-1)	ICAR- Indian Institute of Rice Research, Hyderabad.	MAS Variety
20.	27438	MTU 1281	Regional Agril. Research Station, Maruteru (ANGRAU)	Variety
21.	26227	Kalinga Dhan 1202 (OR 2560-6)	Odisha University of Agriculture & Technology, Bhubaneswar, Odisha.	Variety <b>(Resubmission)</b>
22.	27117	Kalinga Dhan 1203 (ORJ 1135)	Odisha University of Agriculture & Technology, Bhubaneswar, Odisha.	Variety <b>(Resubmission)</b>
23.	28804	DRR Dhan 62 (RP 6286-Bio Patho 5-156-24-7)	ICAR- Indian Institute of Rice Research, Hyderabad.	MAS Variety
24.	26596	VL Dhan 69 (VL 32130)	ICAR- Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Uttarakhand.	Variety <b>(Resubmission)</b>
25.	27722	Pusa Basmati 1847 (Pusa 1847-12-62-190-39-7-15)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
26.	28810	Pusa Basmati 1847-155 (Pusa 1847-12-62-184-36-9-155)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
27.	28811	Pusa Basmati 1847-8 (Pusa 1847-12-62-64-12-6-8)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
28.	28808	Pusa Basmati 1886 (Pusa 1886-13-91-26-9)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
29.	28809	Pusa Basmati 1886-13 (Pusa 1886-13-201-18-13)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
30.	28807	Pusa Basmati 1885 (Pusa 1885-13-125-20-6)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
31.	28806	Pusa Basmati 1885-3 (Pusa 1885-13-242-9-3)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
32.	28812	Pusa Basmati 1979 (Pusa 1979-14-7-33-99-66)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)
33.	28814	Pusa Basmati 1985 (Pusa 1985-15-7-58-190)	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi - 110012)	MAS Variety (Basmati)

## **II. Hybrids:**

<b>S. No</b>	<b>IET No</b>	<b>Designation</b>	<b>Submitted by</b>	<b>Variety/ Hybrid</b>
34.	27332	NPH-X1	Nuziveedu Seeds Ltd.	Hybrid
35.	27387	PHI-18104	PHI Seeds Private Ltd.	Hybrid
36.	24990	MR 8666	Rallis India Ltd.	Hybrid <b>(Resubmission)</b>
37.	27328	Sava 7301 (SHX 015)	Savannah Seeds Pvt. Ltd.	Hybrid
38.	27340	US 319	Seed Works International Pvt Ltd.	Hybrid

All the 38 proposals were critically examined for their overall, zonal and state yield performance over the years, reaction to biotic/abiotic stresses, performance in agronomic trials and quality features. The committee emphasized that if the proposal is for a single state per zone, such proposals may be submitted to SVRC for state release instead of submitting to VIC. However, if such single states per zone are contiguous in different zones, such proposals may be considered by VIC. Specific comments and decision of the committee are given below for all the proposals.

### **Proposal No. 1: IET 27905 (NP 9968)**

This proposal was submitted for irrigated early transplanted ecology. Yield data for the states proposed was not furnished in the submitted proposal. Since the proposal is not in order, it was not considered.

### **Proposal No. 2: IET 27892 (RCPR 58-IR 93827-29-1-1-3)**

The entry IET 27892 was submitted for irrigated early transplanted ecology and the proposal was considered. The entry was found with promising performance in the states proposed. It is moderately resistant to leaf blast. IET 27892 with long slender grain type and desirable grain quality parameters in terms of high HRR (63.2%) and intermediate AC (23.34%) is recommended for **Odisha, Bihar and West Bengal (Zone III), Madhya Pradesh and Maharashtra (Zone V).**

### **Proposal No. 3: IET 27869 [Telangana Vari 4 (JGL 25958)]**

This proposal was submitted under irrigated early transplanted ecology and the proposal was considered. IET 27869 recorded promising yield performance with early duration and moderate resistance to neck blast. IET 27869 with long slender grain type and desirable grain quality parameters in terms of high HRR (61.35%) and intermediate AC (22.38%) is recommended for the states of **Odisha, Bihar and Jharkhand (Zone III).**

### **Proposal No. 4: IET 27914 (CRR 807-1)**

IET 27914 was submitted for irrigated transplanted ecology and the proposal was considered. IET 27914 with promising yield performance, long slender grain type and

desirable grain quality parameters in terms of high HRR (62.4%) and intermediate AC (22.5%) is recommended for **Bihar, Jharkhand and West Bengal (Zone III)**.

**Proposal No. 5: IET 27920 (AD 16028)**

This proposal was submitted to irrigated transplanted ecology and the proposal was considered. It is moderately resistant to leaf blast. It has promising yield performance, long bold grains and acceptable HRR of 58.8% and intermediate AC of 23.83%. It is recommended for the states of **Chhattisgarh, Maharashtra and Madhya Pradesh (Zone V), Bihar, West Bengal and Jharkhand (Zone III)**.

**Proposal No. 6: IET 27883 [CR Dhan 318 (CR 4009-4-2-GSR IR1-DQ 138-L11-Y1)]**

IET 27883 is proposed for irrigated early transplanted ecology and the proposal was considered. It is moderately resistant to leaf blast and neck blast. It has promising yield performance, long slender grains and acceptable HRR of 58.95% and intermediate AC of 23.27%. It is recommended for the states of **Bihar and West Bengal (Zone III), Uttarakhand and Haryana (Zone II)**.

**Proposal No. 7: IET 26126 [Kalinga Dhan 1201 (OR 2512-5)]**

This is a resubmission proposal under irrigated mid early ecology and the proposal was considered. With promising yield performance, it is moderately resistant to leaf blast and bacterial leaf blight and resistant to gall midge with long slender grains and high HRR of 64.35% and AC of 25.86%. It is recommended for **Chhattisgarh and Maharashtra (Zone V)**

**Proposal No. 8: IET 27280 [DRR Dhan 59 (RP 5989-47-15-11-1-126-2-13-11)]**

IET 27280 is a MAS derived variety in the irrigated medium ecology with a major gene *Xa33* for bacterial blight resistance in the background of Akshayadhan and the proposal was considered. Similar to the recurrent parent, it has long bold grains, HRR of 56.2% and AC of 26.57%. Owing to its higher yield advantage over the recurrent parent and inbuilt resistance to bacterial leaf blight, IET 27280 is recommended for the **Akshayadhan gazette notified states (Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Jharkhand)**.

**Proposal No. 9: IET 26819 (MTU 1212)**

IET 26819 is a resubmission proposal submitted for irrigated medium ecology and the proposal was considered. With promising yield performance, it is moderately resistant to leaf blast and neck blast with medium slender grain type and HRR of 63.6% and AC of 23.1%. It is recommended for the states of **Andhra Pradesh and Telangana (Zone VII)**.

**Proposal No. 10: IET 27705 (MTU 1280)**

This proposal is submitted under irrigated medium duration ecology and the proposal was considered. With promising yield performance, it is moderately resistant to neck

blast and has long bold grains, high HRR of 62% and intermediate AC of 23%. It is recommended for the states of **Andhra Pradesh, Telangana, Tamil Nadu and Karnataka (Zone VII)**.

**Proposal No. 11: IET 26024 [Kalinga Dhan 1301 (OR 2573-15)]**

IET 26024 with medium duration in the irrigated ecology is a resubmission proposal and the proposal was considered. With promising yield performance, it is moderately resistant to leaf blast, sheath rot and leaf folder and has acceptable grain quality parameters in terms of long bold grains, 59.2% of HRR, high AC of 26.5% and soft GC of 61 mm. It is recommended for the states of **Andhra Pradesh and Tamil Nadu (Zone VII)**.

**Proposal No. 12: IET 25530 [CR Dhan 319 (CR 3561-3-2-1-1-1-1)]**

This proposal is submitted for irrigated medium ecology and the proposal was considered. With promising yield performance, it has moderate resistance to stem borer. It has short bold grains, high HRR of 63% and AC of 25% and is recommended for the states of **Odisha and Bihar (Zone III)**.

**Proposal No. 13: IET 28784 [DRR Dhan 58 (RP 6287-188-45-12-88)]**

IET 28784 is a MAS derived line in the background of Improved Samba Mahsuri with *Saltol* QTL introgressed for salinity tolerance and the proposal was considered. Similar to the recurrent parent, it has medium slender grains, HRR of 61.6% and intermediate AC of 23.35%. With yield advantage over the recurrent parent both under normal and salinity stress conditions and resistance to bacterial leaf blight, IET 28784 is recommended for the Improved Samba Mahsuri gazette notified states (**Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Odisha, Chhattisgarh, Jharkhand, Bihar, Gujarat and Maharashtra**) of the country.

**Proposal No. 14: IET 28801 [DRR Dhan 61 (RP 6298-FG3G-12-5)]**

IET 28801 is a MAS derived line with a major gene *Xa33* for bacterial blight resistance in the background of Improved Samba Mahsuri. It recorded required yield advantage over recurrent parent and enhanced resistance to bacterial leaf blight. However, the committee suggested for re-testing of IET 28801 for one more year against virulent strains of BB pathogen.

**Proposal No. 15: IET 25419 [HUR 156 (Malviya Sugandhit Dhan 156)]**

This proposal was submitted for consideration under aromatic slender grain (ASG) group and the proposal was considered. With promising yield performance, it is moderately resistant to bacterial leaf blight, brown plant hopper, stem borer and leaf folder. IET 25419 has short slender grains, HRR of 62% and intermediate AC of 23%. It is recommended for the states of **Uttar Pradesh and West Bengal (Zone III)**.



**Proposal No. 16: IET 26431 (YNP 7023)**

IET 26431 was submitted for boro ecology. Year wise data for the states proposed is not furnished and the proposal is not in order. **Hence the proposal is not considered.**

**Proposal No. 17: IET 26171 [DRR Dhan 57 (RP 5601-283-14-4-1)]**

This proposal is submitted for aerobic conditions and is considered and the proposal was considered. With promising yield performance, it is moderately resistant to leaf blast and neck blast. It recorded low white ear damage. IET has short bold grains, HRR of 60% and intermediate AC of 23%. It is recommended for the states of **Jharkhand (Zone III) and Chhattisgarh (Zone V).**

**Proposal No. 18: IET 27118 (MTU 1263)**

IET 27118 is a resubmission proposal under medium slender grain type ecology. **IET 27118 is not identified owing to the data from very less number of locations in the states proposed.**

**Proposal No. 19: IET 28061 [DRR Dhan 60 (RP 5970-2-6-19-16-24-1)]**

IET 28061 is a MAS derived line with *Pup1* QTL introgressed for low soil P tolerance in the background of Improved Samba Mahsuri and the proposal was considered. It has medium slender grains, HRR of 64.5% and intermediate AC of 23.23%. It had yield advantage over the recurrent parent under both normal P and low P conditions and it is resistance to bacterial leaf blight. IET 28061 is recommended for the Improved Samba Mahsuri gazette notified states (**Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Odisha, Chhattisgarh, Jharkhand, Bihar, Gujarat and Maharashtra**) of the country.

**Proposal No. 20: IET 27438 [MTU 1281]**

The medium slender grain type entry IET 27438 exhibited yield superiority over the best varietal check. It also showed acceptable quality: HRR: 67% and intermediate AC: 20% with moderate resistance to pest and disease. It is recommended for the states of **Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Puducherry (Zone VII) and Odisha (Zone III).**

**Proposal No. 21: IET 26227 [Kalinga Dhan 1202 (OR 2560-6)]**

A medium slender grain type entry IET 26227 exhibited the required yield superiority over the best varietal check. It has HRR (63%) and intermediate AC (25%). IET 26227 had moderate resistance to sheath blight and brown plant hopper. It is recommended for the states of **Chhattisgarh (Zone V) and Telangana (Zone VII).**

**Proposal No. 22: IET 27117 [Kalinga Dhan 1203 (ORJ 1135)]**

IET 27117 proposal submission under medium slender grain type trial and the proposal was considered. The entry IET 27117 showed the required yield advantage the best varietal check. It has high HRR (62%), intermediate AC (23%) and had moderate

resistance to brown plant hopper, sheath blight, and leaf folder. It is recommended for the states of **Chhattisgarh and Maharashtra (Zone V) and Odisha (Zone III).**

**Proposal No. 23: IET 28804 [DRR Dhan 62 (RP 6286-Bio Patho 5-156-24-7)]**

IET 28804 is a MAS derived line with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21*, *xa13* and *xa5*) resistant genes in the background of Improved Samba Mahsuri and the proposal was considered. It has medium slender grains and high HRR (61.2%). It had yield advantage over the recurrent parent and it is resistance to blast and bacterial leaf blight. It is recommended for the Improved Samba Mahsuri gazette notified states (**Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Odisha, Chhattisgarh, Jharkhand, Bihar, Gujarat and Maharashtra**) of the country.

**Proposal No. 24: IET 26596 [VL Dhan 69 (VL 32130)]**

This proposal is resubmission proposal for irrigated medium ecology. It has promising yield performance over the best checks. It has short bold grains and HRR of 55.4%. It is recommended for the states of **Uttarakhand, Sikkim and Jammu & Kashmir.**

**Proposal No. 25: IET 27722 [Pusa Basmati 1847 (Pusa 1847-12-62-190-39-7-15)]**

IET 27722 is a MAS derived line with the blast (*Pi2* and *Pi54*) and bacterial leaf blight resistant (*Xa21* and *xa13*) genes in the background of Pusa Basmati 1509. It has extra-long slender grains, HRR of 55.46% and intermediate AC of 22.47%. It is resistant to blast, bacterial leaf blight and has yield advantage over the recurrent parent. **It is recommended for Pusa Basmati 1509 gazette notified states, viz., Delhi, Western UP and Punjab.**

**Proposal No. 26: IET 28810 [Pusa Basmati 1847-155 (Pusa 1847-12-62-184-36-9-155)]**

IET 28810 is a MAS derived line with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21* and *xa13*) resistant genes in the background of Pusa Basmati 1509. It has extra-long slender grains, HRR of 47.05% and intermediate AC of 22.37%. It is resistant to blast and bacterial leaf blight. It was inferior in yield and key Basmati quality parameters compared to recurrent parent and another NIL entry IET 27722 with same gene combination in the Pusa Basmati 1509 background, **Hence IET 28810 is not recommended.**

**Proposal No. 27: IET 28811 [Pusa Basmati 1847-8 (Pusa 1847-12-62-64-12-6-8)]**

IET 28811 is a MAS derived line in the background of Pusa Basmati 1509 with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21* and *xa13*) resistant genes. It has extra-long slender grains, HRR of 48.54% and intermediate AC of 22.88%. It is resistant to blast and bacterial leaf blight. It was inferior in yield and other basmati quality parameters compared to another NIL entry IET 27722 with same gene combination in the Pusa Basmati 1509 background, **Hence IET 28811 is not recommended.**

**Proposal No. 28: IET 28808 [Pusa Basmati 1886 (Pusa 1886-13-91-26-9)]**

IET 28808 is a MAS derived line in the background of Pusa Basmati 6 with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21* and *xa13*) resistant genes. It has extra-long slender grains, acceptable quality with HRR of 50.49% and intermediate AC of 23.71%. It is resistant to blast, bacterial leaf blight and has yield advantage over the recurrent parent and is recommended for **Pusa Basmati 6** **gazette notified states, viz., Haryana and Uttarakhand.**

**Proposal No. 29: IET 28809 [Pusa Basmati 1886-13 (Pusa 1886-13-201-18-13)]**

IET 28809 is a MAS derived line with the blast (*Pi2* and *Pi54*) and bacterial leaf blight resistant genes (*Xa21* and *xa13*) in the background of Pusa Basmati 6. It has extra-long slender grains, HRR of 49.12 % and intermediate AC of 23.3%. It is resistant to blast and bacterial leaf blight. It had lesser yield advantage as compared to another NIL entry IET 28808 with same gene combination in the Pusa Basmati 6 background, **Hence IET 28809 is not recommended.**

**Proposal No. 30: IET 28807 [Pusa Basmati 1885 (Pusa 1885-13-125-20-6)]**

IET 28807 is a MAS derived line in the background of Pusa Basmati 1121 with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21* and *xa13*) resistant genes. It has extra-long slender grains with intermediate AC of 21.76%. It has yield advantage over the recurrent parent and is resistant to blast and bacterial leaf blight. It is recommended for **Pusa Basmati 1121** **gazette notified states, viz., Delhi-NCR, Haryana and Punjab.**

**Proposal No. 31: IET 28806 [Pusa Basmati 1885-3 (Pusa 1885-13-242-9-3)]**

IET 28806 is a MAS derived line in the background of Pusa Basmati 1121 with the blast (*Pi2* and *Pi54*) and bacterial leaf blight (*Xa21* and *xa13*) resistant genes. It has extra-long slender grains, HRR 52.45% and intermediate AC of 23.3%. It is resistant to blast and bacterial leaf blight. It had lesser yield advantage as compared to another NIL entry IET 28807 with same gene combination in the Pusa Basmati 1121 background, **Hence IET 28806 is not recommended.**

**Proposal No. 32: IET 28812 [Pusa Basmati 1979 (Pusa 1979-14-7-33-99-66)]**

IET 28812 is a MAS derived line with herbicide tolerance (Imazethapyr) in the background of Pusa Basmati 1121. It has extra-long slender grains, acceptable quality with HRR of 55.03% and intermediate AC of 21.68%. It has yield advantage over the recurrent parent and is recommended for **Pusa Basmati 1121** **gazette notified states, viz., Delhi-NCR, Haryana and Punjab, subject to the condition that label claims for use of Imazethapyr in rice is obtained.**

**Proposal No. 33: IET 28814 [Pusa Basmati 1985 (Pusa 1985-15-7-58-190)]**

IET 28814 is a MAS derived line in the background of Pusa Basmati 1509 with tolerance to herbicide, imazethapyr. It has extra-long slender grains, with acceptable quality of HRR

56.33% and intermediate AC of 21.89%. It is recommended for **Pusa Basmati 1509** **gazette notified states, viz., Delhi-NCR, Western UP and Punjab, subject to the condition that label claims for use of Imazethapyr in rice is obtained.**

**Proposal No. 34: IET 27332 [NPH-X1]**

IET 27332 is a hybrid entry from Nuziveedu Seeds. Ltd. submitted proposal under irrigated early transplanted ecology. It showed yield advantage over the best varietal and hybrid check in zone III. It is moderately resistant to brown plant hopper and performed better than local check under 50 & 100% NPK. It is recommended for the states of **Jharkhand and West Bengal (Zone III).**

**Proposal No. 35: IET 27387 [PHI-18104]**

IET 27387 is a hybrid entry from PHI Seeds Private Ltd. submitted proposal under irrigated early transplanted condition. It had undesirable quality parameters viz., low HRR of 50.2%, **Hence, not identified.**

**Proposal No. 36: IET 24990 [MR 8666]**

IET 24990 is a resubmission hybrid entry from Rallis India Ltd. submitted proposal under irrigated early transplanted ecology. It showed yield advantage over the best varietal and hybrid checks and is moderately resistant to neck blast. It is recommended for the states of **Odisha and Uttar Pradesh (Zone III), Chhattisgarh (Zone V) and Andhra Pradesh (Zone VII).**

**Report of two hybrid entries IETs 27328 (Proposal No. 37) and 27340 (Proposal No. 38)**

During the Varietal Identification Committee (VIC) meeting held on 8<sup>th</sup> June 2021, it was suggested to seek information from concerned breeders of two hybrid entries (IETs 27328 and 27340) as data provided was incomplete in the said proposals during the meeting. The following report is prepared based on the inputs received from the concerned seed firms.

**Proposal No. 37: IET 27328 [Sava 7301 (SHX 015)]**

**IET 27328 [Sava 7301 (SHX 015)]:** In addition to the report submitted by seed firm, the observations on the data presented in the proposal in comparison with data in the progress report are furnished below.

- IET 27328 [Sava 7301 (SHX 015)] entered in AICIRP testing in 2018 in IHRT trial, recorded required yield advantage over the checks only in two zones (Zone –III and Zone-VII) and thus was tested only in Zone 3 and Zone 7 in AVT- 1 trial during 2019. (As per ACIRIP norms as decided in 2015, entries were evaluated only in the promoted zones and not on overall basis).

- Another decision was taken during 55<sup>th</sup> ARGM in the year 2020 to evaluate the promoted entries on overall basis instead of zonal basis, the said entry though promoted only in zones 3 and 7 got an opportunity for testing in other zones. Thus data is available for 3 years in Zone 3 and 7 while for 2 years in remaining zones. Hence, ideally the proposal should be made for states in zones 3 and 7 only.
- 2019 data of **UP** is **intentionally excluded** in the proposal while two location data is available in the progress report for the year 2019. **The entry didn't show required yield advantage in 2019 over both varietal and hybrid checks**
- 2018 data of **WB** was **intentionally not furnished**, while data is available in the progress report for the year 2018; the said entry is **inferior** to hybrid check.
- 2019 data of **Bihar** though available in the progress report is **intentionally not presented** in the proposal.
- As for the proposed states Punjab (Zone II) and Gujarat (Zone VI), Andhra Pradesh and Kerala (Zone VII) only two years data is available in the Progress Report.
- In Telangana and Karnataka (all three years' data is available), IET 27328 **didn't** show required yield advantage over the BVC
- For the states **Punjab (Zone II), Gujarat (Zone VI), Andhra Pradesh (Zone VII)**, it is found promising in the **3<sup>rd</sup> and 1<sup>st</sup> year of testing**, but data of 2<sup>nd</sup> year is not available. While in **Kerala (Zone VII)** it is found promising in 3<sup>rd</sup> and 2<sup>nd</sup> year of testing, but data of 1<sup>st</sup> year is not available.

The available data in the progress report is not truly presented in the proposal for 3 states Uttar Pradesh, West Bengal and Bihar and in Telangana and Karnataka. IET 27328 didn't show required yield advantage over the BVC.

**Based on the above data, the hybrid entry IET 27328, the following conclusions can be made**

States	Data of the <u><b>all three years of testing</b></u> are available	Data of <u><b>only two years of testing</b></u> are available	Remarks
<b>Zone II</b>			
Punjab		YES (2 <sup>nd</sup> year data missing)	
<b>Zone III</b>			
Jharkhand	YES		<b>Promising</b>
<b>Zone VI</b>			
Gujarat		YES (2 <sup>nd</sup> year data missing)	
<b>Zone VII</b>			
Tamil Nadu	YES		<b>Promising</b>
Andhra Pradesh		YES (2 <sup>nd</sup> year data missing)	
Kerala		YES (1 <sup>st</sup> year data missing)	

**Hybrid entry IET 27328 is found promising in two states i.e. Jharkhand in Zone III and Tamil Nadu in Zone VII, which are not contiguous (i.e. adjoining) states. Hence the proposal may be submitted in respective state SVRCs.**

**Proposal No. 38: IET 27340 [US 319]**

**IET 27340 (US 319):** The response given by the concerned breeder is tallying with the data presented in the progress report and the same is appended below. Some of the state's data was not presented due to below reasons.

- IET 27340 (US 319) entry was not tested in GUJARAT during 2<sup>nd</sup> year 2019.
- IET 27340 (US 319) 3<sup>rd</sup> year - 2020 data from UP @MSD location data not considered in AICRIP analysis due to low experimental means or error in data.
- IET 27340 (US 319) 1<sup>st</sup> year 2018 data from BIHAR @PSA location not included in analysis by AICRIP due to low experimental means.
- IET 27340 (US 319) entry not tested in ODISHA during 2018.

***Based on the above data, the hybrid entry IET 27340 the following conclusions can be made***

States	Data of the <b><u>all three years</u></b> of testing are available	Data of <b><u>only two years</u></b> of testing are available	Remarks
<b>Zone III</b>			
Jharkhand	YES		<b>Promising</b>
Bihar		YES (1 <sup>st</sup> year data missing)	
Odisha		YES (1 <sup>st</sup> year data missing)	
Uttar Pradesh		YES (3 <sup>rd</sup> year data missing)	
<b>Zone VI</b>			
Gujarat		YES (2 <sup>nd</sup> year data missing)	

**Hybrid entry IET 27340 (US 319) is found promising only in one state i.e Jharkhand in Zone III. Hence the proposal may be submitted in respective state SVRC for possible release.**

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**Annexure-A**

**List of members participated in the VIC Committee Meeting on virtual mode during 56<sup>th</sup> ARGM, 2021 at ICAR-IIRR, Hyderabad**

1	<b>Dr. T. R. Sharma, DDG (CS), ICAR, New Delhi</b>	<b>Chairman</b>
2	Dr. Y. P. Singh, Assistant Director General (FFC), ICAR, New Delhi	Member
3	Dr. D. K. Yadava, Assistant Director General (Seeds), ICAR, New Delhi	Member
4	Dr. R. Jagadeshwar, Director of Research, PJTSAU, Rajendranagar, Hyderabad-500 030, Telangana State	Member
5	Dr. Virendra Singh, Director, Directorate of Rice Development, Govt. of India, Patna, Bihar	Member
6	Dr. Ritesh Sharma, Principal Scientist, BEDF (APEDA), SVPUA&T Campus, Meerut	Member
7	Dr. CHM. Vijay Kumar, Tierra Seed Science, Hyderabad	Member
8	Dr. Dipankar Maiti, Director I/C, ICAR-NRRI, Cuttack-753 006, Odisha	Member
9	Dr. Satya Ranjan Das, Honorary Professor, Dept. of Plant Breeding and Genetics, OUAT, Bhubaneswar- 751 003, Odisha	Member
10	Dr. Sanjay Kumar, Director, ICAR-Indian Institute of Seed Science, Village-Kushmaur, Mau-275103, Uttar Pradesh	Member
11	Sri K. Kesavulu, Director, TSSOCA, Hyderabad	Member
12	Sri. A. Britto, Regional Manager, National Seed Corporation Ltd., Tukaram gate, Secunderabad	
13	Dr. A. K. Singh, Director, ICAR-IARI, New Delhi	Special invitee
14	Dr. R. M. Sundaram, Director, ICAR- Indian Institute of Rice Research, Hyderabad-500030	<b>Member Secretary</b>
15	Dr. AVSR Swamy, PI-Incharge, Plant Breeding, ICAR-IIRR, Hyderabad	Member
16	Dr. A.S.Hari Prasad PS & PI Hybrid Rice, ICAR-IIRR, Hyderabad	Member
17	Dr. Jhansi Lakshmi, PS, Entomology, ICAR-IIRR, Hyderabad	Member
18	Dr. M. Srinivas Prasad, PS & PI, Pathology, ICAR-IIRR, Hyderabad	Member
19	Dr. R. Mahender Kumar, PS & PI, Agronomy, ICAR-IIRR, Hyderabad	Member
20	Dr. K. Surekha, PS & PI, Soil Science, ICAR-IIRR, Hyderabad	Member
21	Dr. Jyothi Badri, Senior Scientist, ICAR-IIRR, Hyderabad	Rapporteur
22	Dr. R. Abdul Fiyaz, Scientist, ICAR-IIRR, Hyderabad	Rapporteur

## **CENTERS PRESENTATIONS**

**Chairman:** Dr. D. Subrahmanyam, Director, IIRR  
**Rapporteurs:** Dr. A.P. Padmakumari, Pr.Scientist, IIRR  
Dr. Divya B, Scientist, IIRR  
Dr. K Basavaraj, Scientist, IIRR

### **ICAR Centers**

The individual centers presentations were held on 16<sup>th</sup> April 2021. Dr. D. Subrahmanyam, Director, ICAR-IIRR extended a warm welcome to all the delegates and co-operators for AICRIP center's presentations. At the outset he appreciated to all the Principal Investigators and their team for excellent compilation of progress report 2020 and to coordinating centers for their successful conduct of trials despite the Covid pandemic.

Out of the six ICAR institutes, five of the ICAR institutes could make the presentation. ICAR- Research complex for North-Eastern Shillong did not participate in the group meeting. The following is the gist of presentations by the respective ICAR institutes:

**1. ICAR-NRRI, Cuttack:** Dr. BC Patra (PS & Head), NRRI, presented the results of the trials conducted at NRRI in the prescribed format. He had presented all the details as requested in the prescribed format apart from results of AICRIP trials from Crop improvement, Entomology, Physiology, Plant Pathology, NIL trials on herbicide tolerant lines, screening for high temperature, tolerance, abiotic stress tolerance, salinity osmotic tolerance, submergence tolerance and trials on low light intensity. He reported that, co-operators from zone III & IV had not submitted the data on time and some centers had not followed the technical programme strictly as advised. He also mentioned that some centres had not sent monitoring report. Some of the trials at NRRI cuttack were vitiated due to inundation by heavy rainfall. The major biotic stress trials (Diseases) included screening for sheath blight, brown leaf spot and bacterial leaf blight. The screening for all the diseases except sheath rot were conducted under artificial inoculation condition and the disease pressure for sheath blight, BLB and brown spot was good enough to screen the entries.

**2. ICAR- IARI, New Delhi:** Dr. Ranjit Kumar Ellur had presented the National Basmati Trials, station trials, maintenance breeding program and their focus on the TGMS hybrids. He opined that a correction to be made in draft proceedings with respect to Pusa Basmati 1121 regarding breeder seed production indent. It was also highlighted that the no seed indent should be encouraged for line PB 1638, as it is still under re-testing. The major diseases included in the centre for screening included the leaf blast, sheath blight and bacterial leaf blight. Screening for all the diseases were carried out under artificial inoculation condition and the disease pressure was well enough to screen the entries for all the diseases.



**3. ICAR-CSSRI, Karnal:** Dr S Krishnamurthy, Sr. Scientist presented the results of AICRIP trials conducted at their center. He also presented the trials related to salinity and sodicity which are taken up at the at 3 sub-centers located at Lucknow, Canning and Bharuich. Results of station trials were also presented in detail along with the breeder seed indent.

**4. ICAR- Research complex for Eastern region, Patna:** Dr. Santosh Kumar, Plant breeder has made presentation about the trials conducted at their centers. Out of the 10 allotted trials, only 6 trials were conducted at the center. 40 germplasm line accessions were also evaluated from this center. This center is addressing many issues pertaining to varietal development and improvement at Ranchi and Darbhanga and is also concentrating on biotic and abiotic factors. The major constraint was yield losses due to delayed sowing in the center. They have identified donors for biotic stress. They could conduct a good number of frontline demonstrations. The major biotic stresses in the region included stem borer, brown planthopper, sheath blight and brown spot. In their future plan of work, he mentioned about evaluation of *Trichoderma* based formulation for drought and sheath blight stress.

**5. ICAR- Central Coastal Agricultural Research Institute, Goa:** Dr. KK Manohar made presentation on the AICRP trials conducted CARI, Goa. The allotted trials CSTVT IVT and CSTVT AVT were initiated but vitiated due to submergence by heavy rainfall immediately after planting. Hence he urged the seed should be received before May end so that the trials can be taken up so as to avoid heavy rains in the later part of the season. Of the many constraints, stem borer, gundhi bug, blast and bacterial leaf blight have been found of significance.. In center, salinity and submergence tolerant lines were maintained. Apart from the regular AICRIP trials, centre also taken up seed production activity.

#### **Discussion:**

**Dr. Mahendra Kumar:** Stressed on late receipt of trials at many centers and non conductance of trials. AVT-2 entries seeds may sent before 15<sup>th</sup> may for packing. He also mentioned about the non conduct of Boro trials at Cuttack. Only one center could send the Boro data last year.

**Dr. Hari Prasad, PI, Hybrid Rice:** Many states have single centers, if data is not sent or no proper data, it creates the problem in in the VIC proposal preparation, for instance Pantnagar was eliminated due to high CV.

**Dr. Mridul Chakraborti:** Asked about the herbicides will be sent from IIRR or NRRI, Dr. Gopal Krishnan (IARI) clarified regarding NIL trial on herbicides toletance. He said that the technical programme would be given by Dr RM Kumar, PS, & PI (Agronomy).

Dr. Patra (NRRI): In Boro, there is only one centre in Odisha, so it can be expanded to Chiplima and Jeypore.

**Dr. Manoj (ARS Kota): Requested for Constitution of trial for aromatic long grains because Kota occuppies100% area with basmati rice.**

## **Presentation by AICRIP Centers from Zone II and III**

**Rapporteurs : Dr. A Anandan, Pr. Scientist, NRRI  
Dr. C. Gireesh, Sr. Scientist, IIRR  
Dr. P. K. Bhowmick, Scientist, IARI**

The session was initiated with a warm welcome speech by the Director of IIRR, Hyderabad followed by Dr. B C Patra on behalf of the Director of NRRI, Cuttack. Followed by centers of Northern areas (Zone II) presented their AICRIP work progress of 2020-21. In Zone II, except Kanpur, the remaining six centres namely Chatha, Kaul, Ludhiana, Kota, Nagina and Pantnagar presented the progress report.

### **Zone II**

**Chatha:** Dr. Vijay Bahudur Singh from Chatha Centre, SKUAST (J&K) has presented the progress of AICRIP for the year 2020-21. They have been allotted two breeding trials, one each of IVT-BT and AVT1-BT, and both were conducted. In addition, two agronomic trials, five pathology trials and eight entomology trials were also conducted. They expressed lack of support staff as a constraint for decreased number of trials in the station.

**Kaul:** Dr. Mangat Ram from RRS, Kaul Centre (Haryana) presented about 12 irrigated trials of crop improvement, seven agronomy trials, eight entomology trials. The constraints highlighted were the delayed receipt of seeds for the trials and also the delayed release of funds.

**Ludhiana:** Progress of Ludhiana centre was presented by Dr. Rupinder Singh. They have conducted 16 out of 21 trials allotted in breeding, 21 trials in entomology and 10 trials in pathology. The Ludhiana centre has nominated eight test entries into AICRIP system. Punjab Basmati7 has been identified for release by the SVRC. The sowing date of Punjab and arrival of seeds for the trials do not coincide and the shortage of staff is the major problem.

**Kota:** Dr. Manoj Kumar presented the work progress of Kota Centre. This center was allotted five crop improvement trials, six nutrient management trials, and all of them were conducted. Among them, data of two trials from crop improvement and five trials of nutrient management have been sent to ICAR-IIRR. The center is not suitable for Irrigated medium trials and hence wouldn't be continuing IM trials, however, requested for biofortification and IME trials.

**Nagina:** Dr. Rajendra Singh of Nagina Centre, Bijnor stated that four out of the five crop improvement trials and four agronomic trials were conducted. They have identified 39 blast and 35 BLB resistant donor lines. Due to the delay in arriving of the seeds for trial, four of the seven nutrient management trials were conducted.

**Pantnagar:** Dr. I D Pandey of Pantnagar center, GBPUAT, conducted all of the 11 crop improvement trials allotted. They have identified three and two donor lines from BLB

and BPH respectively. They could only complete seven of the nine nutrient management trials allotted due to delayed receiving of seeds. The center also conducted seven agronomic trials (nine allotted), three soil science trials (three allotted), 12 entomology trials (12 allotted), three physiological trials, and pathology trials. They also nominated 17 test entries to AICRIP testing.

### **Zone III**

**Bankura:** the progress of the Bankura center of West Bengal was presented by Dr. G K Mallick. This center conducted five out of the seven allotted trials under the crop improvement program. Only two of the six pathology trials were conducted.

**Ghaghraghat:** Dr. Nitendra Prakash of CRS, Ghaghraghat center was not able to undertake any crop improvement trials due to the delayed arrival of seeds for trial and early monsoon. NDGR-702 has been identified for release by the SVRC for deep water conditions. They have also carried out two of the nine agronomic trials, pathology trials (ten experiments) and soil science trials (voluntary center).

**Jeypore:** Dr. Mihir Ranjan Mohanty of RRTTS, OUAT, Jeypore conducted all the 19 trials allotted under the varietal improvement program. The center has submitted proposals to the SVRC for the release of varieties such as ORJ 7 and ORJ 1161. Two candidates have been proposed for the Plant Genome Saviour Community Awards for their contribution towards the conservation of landraces. The major constraints were lack of supporting staff and infrastructure facilities like rainout shelters, laboratory, etc.

**Chiplima:** DR. Rinipal presentd that all the eight allotted crop improvement trials, four out of seven agronomy trials, seven of the eight plant pathology trials, and entomology trials were conducted. The highlighted problems were late receipt of seed materials, high temperature, and heavy infestation of pests and diseases.

**Pusa:** Dr. Biswajit Pramanick of Pusa Centre, RPCAU (Bihar) presented the work progress of the center. The center conducted 12 out of the 16 crop improvement trials, seven nutrient management trials, and three soil science trials allotted.

**Varanas:** Dr. V K Srivastava has carried out 10 of the 16 crop improvement trials allotted. They highlighted the reduction in yield due to late planting, disease, and pest incidence. All the six nutrient management trials allotted to them were completed.

**Ranchi:** BAU center, Ranchi (Dr. Krishna Prasad) has conducted 13 (18 allotted) rice breeding trials and conducted all eight trials under nutrient management and entomology allotted to the center. Voluntarily they have also carried out four trials under hybrid rice, eight under entomology, one under soil science, and two in physiology trials. The Centre highlighted the absence of a water facility and the availability of male workers as the major issues.

**Chinsurah:** Dr. Sangeet Sekhar Deb has presented the AICRIP progress of 2020-21. The center had conducted 18 out of the 27 trials allotted to them under the crop improvement program. During the year 2020-21, their variety Sukumar was notified by SVRC. Under

nutrient management trials, they have conducted seven of the nine Kharif (2020) trials and all the two rabi (2019-20) trials allotted to them. The center has also carried out three (three allotted), nine (eleven allotted), eleven (fourteen allotted), and two (two allotted) trials under soil science, entomology, pathology, and physiology respectively. The constraints in this center were, delayed receiving of seeds and scarcity of labours due to the COVID situation.

**Dhaingain:** BAU-BRU center, Dhangain, Bikamganj (Bihar) (Dr. Prakash Singh) has conducted all the eleven crop improvement trials allotted to them. They have also conducted four nutrient management trials and five pathological trials. IVT IM, IME, Late, ETP, ASG, and Biofort trials were received very late and did not perform well.

**Masodha:** CRS, Masodha, ANDUAT, Ayodhya (Dr. D K Dwivedi) has conducted 16 trials out of the 29 crop improvement trials allotted to them. The major issues of the center were late receipt of seeds and high infestation of False smut. The SVRC has identified three varieties; NDR 8399-2, NDR 9730018, and NDRK 50046 for release. The center has also undertaken nutrient management trials, pathological and physiology trials

**Kanpur** center did not present their work progress of AICRIP for the year 2020-21.

## **Presentation by AICRIP Centers from Zone IV and V**

**Rapporteurs: Dr. B. Sreedevi, Pr. Scientist, IIRR  
Dr. P. Seguttuvel, Sr. Scientist, IIRR**

### **Titabar:**

The oldest centre which focus on winter rice (Sali) of 18.89 lakh ha followed by summer rice (Boro) of 4.05 lakh and Autumn rice (Ahu) of 1.91 lakh ha. Among the three season of rice cultivation, Boro rice has maximum productivity followed by winter rice. The major constraints are frequent occurrence of flood, erratic rainfall and shortage of labor during peak season. The major research focus is in the development of varieties suitable for Boro with blb resistance, drought and submergence tolerance. The popular rice variety is Ranjith with Sub1 tolerance, whereas Numali and U-86 new varieties submitted for proposal. 518 nos of germplasm were sent to NBPGR for registration as new genetic stocks. BSP for Ranjith Sub1, Bahadur Sub 1, Gitesh, Numali, KetekiJoha and Aghoni Bora are indented. In Crop Production Program, Nine Agronomy trials were conducted with emphasis on enhancing productivity of organic rice, yield maximization in different establishment methods, conservation agriculture in rice and rice based systems; four Soil Science trials on long term soil fertility management in RBCS, soil quality and productivity for bridging the yield gap, screening of germplasm for soil acidity and nitrogen use efficiency.; five physiology trials on influence of Si on abiotic stress

tolerance, screening for heat , submergence, low light, multiple abiotic stresses and the results of the findings were presented.

#### **Arundhatinagar:**

The centre established in 1942 with special focus on Jhum cultivation. Among 9 trials allotted only 4 trials data was sent to IIRR. AVT-1-ETP, AVT-2M and IHRT-MS were affected due to heavy rainfall. The major constraints are lack of infrastructure (irrigation and drainage). The major research activity is on development of photo or thermos insensitive aromatic rice and development of drought tolerant upland varieties. The SVRC identified varieties during 2021 is Arundhati 2012-1 and IET 25332. The major rice varieties indented for BSP are Kalikasha, Satabdi, Kakuchuk-2, Arundhati-2012-1 and CO-51. In Crop Production Program, two Agronomy trials were conducted on development of suitable package for dry and wet seeded rice. In Crop Protection Program, four Entomology trials. Pathology trials were damaged by rats. FLDs on Drought tolerant variety for Jhum areas is proposed.

#### **Wangbal – Not represented**

**Sakoli:** ARS, Sakoli was established in 1969 with focus of research for irrigated ecology of Zone V (Central Region). The major thrust area of development of rice varieties for super fine grain with Hopper resistance and bio-fortified colored grain varieties. In addition, special focus on development of rice varieties for DSR condition. The research on above areas were initiated where Indira aerobic, IR 64, PKV Ganesh and DRR dhan 45 were utilized in crossing programme. A total of 16 AICRIP trials were allotted and conducted. 23 out of 35 entries in IVT-Biofort were not germinated due to continue rainfall. Super grain varieties PDKV Sakolired rice-1 and SKL-3-1-41-8-33-15 for Vidarbha region of Maharashtra are SVRC release. SKL-07-8-7-20-63-147-182-276 was identified as promising donor for plant hoppers. In Crop Protection Program, 11 trials were conducted out of 13 trials allocated. In Gall Midge screening and evaluation program, promising lines were identified. Pest survey report was made regarding incidences.

#### **Raipur:**

The centre was established 1968 with focus on rain fed ecosystem of Zone V (Chhattisgarh) and the research in improvement of rice varieties for drought with biotic and abiotic stresses. A total of 18+4 AICRIP trials were conducted. The number of germplasm available is 23250 and rest 20363 is land races. In Crop Production program, 8 Agronomy trials on AVT2 -MS, AVT2-Aerobic, AVT2-ASG, IVT on Phosphorous Use Efficiency; development of suitable package of practices for dry Direct Seeded Rice , development of suitable package of practices for wet Direct Seeded Rice, yield maximization of rice, enhancing productivity of organic rice cultivation, integrated pest management were conducted and results presented. In Plant Physiology program, trials on drought and low-light stress were reported. In Entomology program, 13 trials were conducted and in Pathology program, 4 trials were reported. Pest survey was reported

but couldnot give complete report due to COVID. Production Oriented Survey also was not conducted due to COVID.

**Rewa:**

The centre is working in rainfed upland ecologies, number of AICRIP allotted are eight and only seven were conducted. IVT aerobic germination are poor. The popular varieties where BSP targeted are JR81, JR 206, Improved Chinnor, JR 201 and Kranti. Agronomy and Entomology positions are vacant.

In Crop Production Program, 5 Agronomy trials were conducted on AVT2-E, AVT-1-BT, developing a suitable package for wet Direct Sown Rice, long term trial on weed dynamics in different establishment methods, sustainable weed management in aerobic rice system were conducted and reported. In Plant Physiology program, 2 trials on influence of Silicon on improving abiotic stress tolerance in rice genotypes, screening of rice varieties for tolerance to heat stress. In Plant Protection program, 2 Entomology trials and 4 Plant Pathology trials were reported.

**Jagdalpur:**

The centre was established in 1987 for agro ecological region of Bastar (Zone V). The research focus is on development of varieties for upland, mid land and low land ecologies. 15 AICRIP breeding trials were allotted and only 13 trials were conducted. Bastardhan1 was released for this region of Bastar plateau. All the three ecologies are distinct in the research farm. In Crop Production program, 10 Agronomy trials on AVT2-E, AVT2-Aerobic, AVT2-NIL, developing a suitable package of practices for dry Direct Sown Rice, long term trial on weed dynamics in mono or double cropped rice system under different establishment methods. Evaluation of advanced cultures for weed competitive ness under aerobic rice system, sustainable weed management in aerobic rice system, integrated pest management, conservation agriculture based management practices in rice and rice based cropping systems, assessing the performance and yielding ability of kharif sorghum hybrids and millets in rice based cropping systems were conducted and presented.

## **Presentation by AICRIP Centers from Zone VI and VII**

**Rapporteurs : Dr Suneetha Kota, Sr.Scientist, IIRR  
Dr. V. Prakasam, Scientist, IIRR  
Dr. Ch. Suvarna Rani, Scientist, IIRR**

The centre wise presentations from Zone VI and Zone VII were held in virtual mode on 17 April, 2021. All the centres in Zone VI (Western region) except Tuljapur and all the 12 centres from zone VII (southern region) made the presentations about the conduct of the AICRIP trials during kharif, 2020 as a part of AGRM, 2021.

**Karjat:** Dr. Wagmode, Sr. Rice Breeder from RARS, Karjat presented the rice scenario in North Konkan region of Maharashtra which is majorly the rainfed irrigated ecology. Salient features of the 15 varietal and 4 hybrid trials along with agronomy, entomology, pathology and physiology trials conducted during kharif, 2021. In addition, the details of the breeding material generated for biotic stress tolerance, submergence tolerance, aromatic, fine grain and bio fortified rice varieties suitable for their region. The centre has come with a recommendation for integrated nutrient management for high profitability and productivity from Rice-Chickpea cropping system. The centre needs artificial screening facilities for effective phenotyping against biotic and abiotic stresses. Also presented the future line of work which includes speed breeding, development lines for processing industry and strengthening of hybrid rice programme.

**Nawagam:** Dr. Mahesh from AAU, Nawagam presented AICRIP trials conducted at Nawagam, Dhabol and Derol which include the transplanted and direct seeded aerobic trials. Seventeen among the 19 allotted plant breeding trials were conducted. In addition, all the allotted trials of agronomy (3), plant pathology (20), entomology (9), were also conducted. POS indicated the prevailing crop rotations of rice-wheat-rice, rice-chickpea, rice-tobacco, rice-wheat-vegetables, and rice-wheat- maize. Salient achievements of varietal development, the pipeline breeding material and the future line of work including development of early maturing, medium tall aromatic short grain varieties with biotic stress tolerance elaborated.

**Navasari:** Dr. P.B. Patel from NAU, Navsari presented the results of trials conducted and their salient findings including plant breeding, agronomy, and entomology and pathology trials along with the future thrust areas of research.

From Zone VII, presentations were made from Brahmavar, Gangavati, Moncompo, Pattambi, Puducherry, Aduthurai, Coimbatore, Mandya, Maruteru, Rajendranagar, Warangal and Mugad centres. All the centres have presented the conduct of the AICRIP trials, performance of the entries in the respective trials, the research activities and the breeding material generated at the respective centre according to prescribed mandate, the popular prevalent varietal and production technologies and future thrust areas of research. Few points emerged during presentations are

- (1) Collection, characterization and utilization of local germplasm
- (2) Focus on cropping system in paddy fallows
- (3) Production constraints need to be addressed which include Soil acidity and nutrient loss due to heavy rainfall, non- availability of hybrids and limited choices of varieties to the problematic areas like saline soils and flood situation, varieties suitable for late kharif, salinity, Nutrient imbalances due to deficiency (Mg and B) and toxicity (Fe and Al) of secondary and micronutrients
- (4) Growing demand for red rices and MS grain with early to mid early duration, biotic and abiotic stress tolerance,

- (5) Improvement of nutritive and medicinal value of rice, identification of varieties for industrial processing-puffing and flaking
- (6) Mechanization and development of climate resilient practices for mitigating climate change including unprecedented high rainfall and flood,
- (7) Monitoring virulence of major rice pathogens,
- (8) Refinement and popularization of IPM strategies,
- (9) Pre-breeding to utilize the wild germplasm, screening landraces for drought tolerance
- (10) Identification, evaluation and integration of effective botanicals in IPM package to minimize the use of synthetic insecticides
- (11) Evaluation of different agronomic technologies for water use efficiency and maximizing rice productivity with less water

The session ended with the closing remarks by Dr. B. C. Patra from NRRI and remarks by Dr. D. Subramanyam from IIRR for the excellent presentations made by all the centres.

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## Particulars of Zones, States and test Locations

Region / State	Locations	
	Funded	Voluntary
<b>ZONE I - HILLY AREAS</b>		
<b>North Western Hills</b>		
Jammu & Kashmir	Khudwani (1)	Rajouri, Wadura, Pombay (3)
Himachal Pradesh	Malan (1)	Palampur, Dhaulakhan, Sundernagar, Bajaura (4)
Uttarakhand		Almora, Bageshwar, (2)
<b>North Eastern Hills</b>		
Manipur	Wangbal (1)	Imphal-CAU (1)
Nagaland	Kohima (1)	
Sikkim		Gangtok (1)
Meghalaya	Upper Shillong (1)	ICAR-Umiam, CAU-Umiam (2)
West Bengal		Kalimpong (1)
<b>Southern Hills</b>		
Karnataka	Ponnampet (1)	Sirsi (1)
<b>ZONE II - NORTHERN</b>		
New Delhi		IARI- New Delhi (1)
Uttarakhand	Pantnagar (1)	
Punjab	Ludhiana (1)	Gurdaspur, Kapurthala, Rauni (3)
Haryana	Kaul (1)	Karnal (CSSRI), Palwal, Jind, Kurukshetra, Panipat (5)
Uttar Pradesh	Nagina, Kanpur (2)	
Jammu & Kashmir	Chatha (R.S. Pura) (1)	
Rajasthan	Kota (1)	Banswara (1)
<b>ZONE III - EASTERN</b>		
Orissa	Jeypore, Chiplima (2)	Bhubaneswar, NRRI (Cuttack), (2)
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 Nagar, SVPUAT, Meerut (4)
<b>ZONE IV - NORTH EASTERN</b>		
Assam	Titabar (1)	Gerua, Karimganj, Shillongani (3)
Manipur	Wangbal (1)	Lamphalpat, (1)
Tripura	Arundhutinagar (1)	Lembucherra (1)
<b>ZONE V - CENTRAL</b>		
Madhya Pradesh	Rewa (1)	Waraseoni, Jabalpur (2)
Chhattisgarh	Raipur, Jagadapur (2)	Bilaspur, Ambikapur (2)
Maharashtra	Sakoli (1)	Sindewahi (1)
<b>ZONE VI - WESTERN</b>		
Maharashtra	Karjat, Tuljapur (2)	Panvel, Radhanagari, Shirgaon, Phondaghat, Vadagaon, Parbhani, Palghar (7),
Gujarat	Nawagam, Navsari (2)	Derol, Vyra, Danti, Dabhoi, (4)
Goa		Goa (1)
<b>ZONE VII - SOUTHERN</b>		
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, Annamalai Nagar, Tirur, (3)
Kerala	Moncompu, Pattambi (2)	Vyttila (1)
Karnataka	Mandya, Mugad, Ponnampet, Brahmavar, Gangavati (5)	Sirsi, Malagi, Kumta (3)
Puducherry	Kurumbapet (1)	Karaikal (1)
<b>Total locations</b>	<b>45</b>	<b>78</b>

Underline :ICAR Institutions

## Appendix-2

**List of Coordinated Trials, Kharif 2021**

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 2021**

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

**Nominations for AICRIP Trials, Kharif 2021\***

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 – 2022**

1.	For entries which have been tested for 3 years	:	Last date of receipt: <b>31<sup>st</sup> December, 2021</b>
2.	For entries which are in 3 <sup>rd</sup> year (final) of testing.	:	Last date of receipt: <b>10<sup>th</sup> March, 2022</b>
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. ( <a href="http://www.drricar.org">www.drricar.org</a> )		

**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 2021**

1.	For those which are identified by VIC	:	Latest by 15 <sup>th</sup> July, 2021
2.	Number of copies for submission	:	40 Copies
	<b>35 copies of the proposal should be sent to:</b>		Deputy Commissioner (QC)-cum Member Secretary of CSC on CSN&RV Ministry of Agriculture & Cooperation F212, Shastry Bhavan <b>NEW DELHI-110002</b>
	<b>5 copies of the proposal should be sent to:</b>		The Director ICAR-Indian Institute of Rice Research Rajendranagar <b>HYDERABAD-500030</b>
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		

**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**

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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.

**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 52<sup>nd</sup> ARGM held at AAU, Jorhat.**

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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 52<sup>nd</sup> Annual Rice Research Group Meeting held at Assam Agricultural University, Jorhat, Assam during 8-11, April 2017. The members of the committee met on 10<sup>th</sup> 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 44<sup>th</sup> 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	Percent age 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**

<b>S. No.</b>	<b>Item</b>
1.	Summary of the Proposal
2.	Proforma for Submission of Proposal for Identification of Crop Varieties/hybrids by Workshops
3.	Summarized Yield Data of the Coordinated Varietal Trials
4.	Adaptability to Agronomic Variables
5.	Reaction to Major Diseases
6.	Reaction to Insect-pests
7.	Data on Quality Characteristics
8.	Data on Other Important Characters
9.	Any other
10.	Guidelines for Filling-up the Proforma

**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 (under 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)	1 <sup>st</sup> year									
a) Zonal	2 <sup>nd</sup> year									
b) Across zones (if applicable)	3 <sup>rd</sup> year									
	Weighted mean									
Percentage increase or decrease over checks & qualifying varieties	1 <sup>st</sup> year									
Frequency in the top three groups (pooled for three years)	2 <sup>nd</sup> year									
	3 <sup>rd</sup> 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 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	(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	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
Disease 2	Natural	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
Disease 3	Natural	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
Disease 4	Natural	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Pest 2	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Pest 3	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
2	Days to flowering	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
3	Days to maturity	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
4	1000-grain weight	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
5	Lodging	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
6	Others	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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, whether 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**

S No	Item	Content
1	Summary of the Proposal (in bullets only)	
2	Proforma for Submission of Proposal for Release of Crop Varieties/Hybrids to the Central Sub-Committee on Crop Standards Notification and Release of Varieties	
3	Summarized Yield Data of the Coordinated Varietal Trials	
4	Adaptability to Agronomic Variables	
5	Reaction to Major Diseases	
6	Reaction to Insect-pests	
7	Data on the Quality Characteristics	
8	Data on the Other Important Characters	
9	Guidelines for Filling-up Proforma	

**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 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/ 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 (under 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)	1 <sup>st</sup> year									
a) Zonal	2 <sup>nd</sup> year									
b) Across zones (if applicable)	3 <sup>rd</sup> year									
Percentage increase or decrease over the checks and qualifying varieties	Weighted mean 2 <sup>nd</sup> year 3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Disease 2	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Disease 3	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Disease 4	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Pest 2	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
Pest 3	Natural	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
	Artificial	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
2	Days of flowering	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
3	Days to maturity	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
4	1,000-grain weight	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> year								
6	Others	1 <sup>st</sup> year								
		2 <sup>nd</sup> year								
		3 <sup>rd</sup> 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 <sup>2</sup>	:	
Plot size (Net)m <sup>2</sup>	:	
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)



## CENTRE WISE BREEDER SEED PRODUCTION DURING KHARIF, 2020 (AS PER DAC INDENT)

(Quantity in Quintals)

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
Andhra Pradesh					
1	ANGRAU, Guntur	AMARA (MTU-1064)	6.60	51.00	44.40
		BHARANI (NLR 30491)	4.00	0.00	-4.00
		BPT 5204	43.50	0.00	-43.50
		BPT-3291 (SONAMASURI)	4.00	0.00	-4.00
		CHANDRA(IET 23409) (MTU-1153)	26.50	70.00	43.50
		COTTONDORA SANNALU (MTU-1010)	201.20	2.80	-198.40
		MARUTERU SANNALU (MTU-1006, IET-14348)	1.00	0.00	-1.00
		MTU 1001 (VIJETHA )	86.20	55.00	-31.20
		MTU 1075 (IET 18482)	14.00	23.00	9.00
		MTU 1078	3.00	0.00	-3.00
		MTU 1140 (BHEEMA)	8.30	15.00	6.70
		MTU 1156	87.90	5.80	-82.10
		MTU 2116	3.00	0.00	-3.00
		MTU-1061	7.20	25.00	17.80
		MTU-1081	0.10	0.00	-0.10
		MTU-1121(SRI DHRUTHI)	30.60	40.00	9.40
		MTU-1155	3.00	0.80	-2.20
		MTU-1172	1.00	7.20	6.20
		MTU-1187	0.60	0.00	-0.60
		MTU-1194	0.60	0.00	-0.60
		MTU-1210	3.00	1.20	-1.80
		MTU-3626	1.50	3.00	1.50
		MTU-7029	119.30	96.00	-23.30
		NDLR-7	60.00	0.00	-60.00
		NELLORE MAHSURI (NLR-34449)	4.00	0.00	-4.00
		NLR34449	4.00	0.00	-4.00
		PARDHIVA (NLR - 33892)	5.00	0.00	-5.00
		PRABHAT	1.00	0.00	-1.00
		RGL 2537	10.50	0.00	-10.50
		Total		740.60	395.80
Assam					
2	RARS, Titabar (AAU, Jorhat)	BAHADUR SUB-1	51.50	28.29	-23.21
		GITESH	25.00	48.20	23.20
		INGLONGKHERI	30.00	0.00	-30.00
		JALASHRI (TTB 202-3)	30.00	0.00	-30.00
		JALKUNWARI (TTB 202-4)	30.00	0.00	-30.00
		KANAKLATA	25.65	0.00	-25.65
		RANJEET (IET - 12554)	1.50	144.80	143.30
		RANJIT SUB -1	54.80	170.00	115.20
		RONGKHAND	30.00	0.00	-30.00
		Total		278.45	391.29
Bihar					
3	RAU, Pusa	RAJENDRA BHAGVATI	36.50	44.50	8.00
		RAIENDRA KASTURI	0.30	6.00	5.70

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
		RAJENDRA MAHSURI-1	54.80	81.00	26.20
		RAJENDRA SWETA	20.55	29.00	8.45
		R Neelam	0.30	45.00	44.70
		Total	112.45	205.50	93.05
4	BAU, Sabour	SABOUR SHREE (RAU 724-48-33) (IET 18878)	50.20	173.50	123.30
		SETHA	0.60	5.00	4.40
		Total	50.80	178.50	127.70
Chhattisgarh					
5	IGKV, Raipur	BADSHABHHOG SELECTION-1	16.00	9.30	-6.70
		BAMLESHWARI (IET NO.14444, R 738-1-64-2-2)	10.00	11.70	1.70
		C.G. SUGHANDIH BHOG	20.00	20.10	0.10
		CG MADHURAJ DHAN-55	15.30	15.50	0.20
		CHANDRAHASINI (IET - 16800)	10.00	13.50	3.50
		CHHATTISGARH DEVBHOG	10.00	18.00	8.00
		CHHATTISGARH ZINC RICE-1	22.20	22.50	0.30
		CHHATTISGARH ZINC RICE-2	30.00	30.80	0.80
		DANTESHWARI (IET NO. 15450, R 302-111)	10.00	18.90	8.90
		DUBRAJ SELECTION-1	20.50	24.00	3.50
		IGKVR-1 (IET 19569)	0.30	0.00	-0.30
		IGKVR-2 (IET 19795)	15.00	16.50	1.50
		INDIRA AEROBIC- 1 (R1570-2649-1-1546-1) (IET 21686)	30.50	47.70	17.20
		INDIRA BARANI DHAN-1 (RF-17-38-70)(IET 21205)	22.00	26.70	4.70
		IR-36	10.00	15.30	5.30
		IR-64	44.00	51.00	7.00
		JALDBI (IET - 17153)	2.00	2.00	0.00
		MAHAMAYA (IET-10749)	85.00	85.80	0.80
		MAHESWARI (IGRKVR-1244)	20.00	20.10	0.10
		POORNIMA (IET-12284,R-281-PP-31-1)	1.50	2.55	1.05
		RAJESWARI (IGKVR-1)	45.10	73.50	28.40
		TARUN BHOG SELECTION-1	10.00	7.50	-2.50
		TROMBEY CHATTISGARH DUBRAJ MUTENT-1	10.00	24.00	14.00
		VISHNUBHOG SELECTION-1	15.00	19.80	4.80
		ZINCO RICE MS	51.00	52.20	1.20
		Total	525.40	628.95	103.55
Gujarat					
6	GAU, Nawagam	GAR-14	0.60	2.25	1.65
		GNR-3	0.50	15.00	14.50
		MAHISAGAR	0.50	5.50	5.00
		Total	1.60	22.75	21.15
Haryana					
7	CSSRI, Karnal	CSR 56 (IET 24537)	1.25	4.80	3.55
		CSR 60 (IET 25378)	0.25	5.20	4.95
		CSR 30	0.10	7.95	7.85
		CSR 36 (NAINA) (IET17340)	8.80	9.00	0.20
		CSR 43	1.00	5.40	4.40
		CSR 46 (CSR 2K-262)	1.50	5.40	3.90

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
8	RRS, Kaul	CSR 52 (CSR 12 B 23)	0.60	2.00	1.40
		Total	13.50	39.75	26.25
		BASMATI-370	10.00	5.00	-5.00
		HKR-127 (HKR-95-222)	2.70	3.00	0.30
		HKR-128	0.25	1.00	0.75
		HKR-47	7.00	5.00	-2.00
		HKR-48	0.50	1.00	0.50
		Total	20.45	15.00	-5.45
Himachal Pradesh					
9	CSKHPKV V, Malan	HIM PALAM DHAN-1	5.10	5.25	0.15
		HPR 2143	10.00	10.20	0.20
		HPR-1068	5.00	7.18	2.18
		HPR-2720	5.00	3.06	-1.94
		Total	25.10	25.69	0.59
Jharkhand					
10	CRURRS, Hazaribagh	ABHISHEK (IET - 17868)(RR-272-829)	3.22	9.20	5.98
		ANJALI (IET-16430, RR-347-166)	0.50	9.20	8.70
		SAHBHAGI (SAHBHAGI DHAN IET-19576)	76.44	164.00	87.56
		Total	80.16	182.40	102.24
11	BAU, Ranchi	BIRSA MATI	1.65	2.00	0.35
		BIRSA VIKAS DHAN - 111 (IET 19848) (PY - 84)	1.65	1.70	0.05
		BIRSA VIKAS DHAN - 203	2.10	2.20	0.10
		BIRSA VIKAS DHAN-109	1.65	1.70	0.05
		BIRSA VIKAS DHAN-110	1.65	1.75	0.10
		BIRSA VIKAS SUGANDHA - 1 (IET 18941)	1.65	2.20	0.55
		Total	10.35	11.55	1.20
Jammu & Kashmir					
12	SKUAT, Khudwani	K 39	2.00	2.10	0.10
		K-448	2.00	2.20	0.20
		Total	4.00	4.30	0.30
13	SKUAST, Chatha	BASMATI-564	0.10	0.10	0.00
		GIZA-14	4.00	8.00	4.00
		JAMMU BASMATI-129 (SJR-129-2-2) (IET 24597)	1.10	0.37	-0.73
		SJR-5(IET-19972)	15.00	0.25	-14.75
		Total	20.20	8.72	-11.48
Karnataka					
14	UAS, Bengaluru	BR-2655	2.50	6.00	3.50
		THANU	2.90	3.00	0.10
		TUNGA (IET-13901)	4.75	5.00	0.25
		Total	10.15	14.00	3.85
15	ARS, Mugad	INTAN	1.50	2.50	1.00
		KMD-2 (ABHILASH)	1.50	2.50	1.00
		Total	3.00	5.00	2.00
Kerala					
16	RRS, Monocompu	BHADRA (MO-4)	3.50	0.50	-3.00
		MO 21 (PRATIKSHA)	0.75	2.50	1.75
		UMA (MO-16)	18.75	16.00	-2.75
		Sreyas	0.60	0.00	-0.60

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
		Total	23.60	19.00	-4.60
17	KAU, Pattambi	ATHIRA (PBT-51)	0.50	2.00	1.50
		JYOTHI	13.40	14.00	0.60
		Total	13.90	16.00	2.10
Madhya Pradesh					
18	JNKVV, Jabalpur	IMPROVED CHINNOR	10.30	13.85	3.55
		IMPROVED JEERA SHANKAR	10.30	10.32	0.02
		JR 767	11.80	12.00	0.20
		JR-81	10.90	905.34	894.44
		JRB-1	23.00	40.50	17.50
		JRH-19	5.00	5.00	0.00
		KRANTI (R-2022)	0.50	2761.29	2760.79
		RASHMI(JR-201)	10.00	10.80	0.80
		Total	81.80	3759.10	3677.30
Maharashtra					
19	RARS, Karjat	KARJAT-3	2.50	4.95	2.45
		KARJAT-5	0.60	3.60	3.00
		KARJAT-7	1.50	8.10	6.60
		KARJAT-8	1.60	3.78	2.18
		KARJAT-9	0.60	5.40	4.80
		Total	6.80	25.83	19.03
20	ARS, Ratanagiri	RATNAGIRI-9	0.60	6.62	6.02
		RATNAGIRI-7	0.30	4.59	4.29
		RTN-5	3.00	14.40	11.40
		RTN-8	0.30	9.00	8.70
		Total	4.20	34.61	30.41
21	ARS, Vadagaon (MPKV, Rahuri)	INDRAYANI (IET - 12897)	15.40	50.00	34.60
		PHULE SAMRUDDHI (VDN-99-29)	1.00	10.00	9.00
		Total	16.40	60.00	43.60
22	ARS, Radhanagiri	Bhogavati	0.60	5.50	4.90
		Total	0.60	5.50	4.90
23	ARS, Sakoli	SAKOLI-9	0.60	1.00	0.40
		Total	0.60	1.00	0.40
24	ARS, Sindewahi	PDKV TILAK (SYE-503-78-34-2)	1.50	5.00	3.50
		PKV HMT	30.60	45.00	14.40
		PKV KISAN	1.00	2.00	1.00
		Total	33.10	52.00	18.90
New Delhi					
25	BEDF, New Delhi	PUSA - 1121 (PUSA SUGANDH-4)	20.00	20.00	0.00
		PUSA BASMATI-1509 (IET 21960) (PUSA 1509-03-3-9-5)	29.00	0.00	-29.00
		Total	49.00	20.00	-29.00
26	DSST & IARI, New Delhi	PUSA 1592	0.58	2.50	1.92
		PUSA Sugandh-2(IET-16310,PUSA-204-1-126)	0.40	0.00	-0.40
		PUSA-6 (IET22290) (PUSA 1612-7-6-5)	0.60	4.50	3.90
		PUSA Sugandh-3(IET-16313,PUSA-2504-1-3-1)	20.50	0.00	-20.50
		PUSA Sugandh-5(IET-17021)	66.71	69.50	2.79
		Total	88.79	76.50	-12.29

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
27	ICAR-IARI, Regional Station, Karnal	IMPRIOVED PUSA BASMATI-1 (IET - 18990) (PUSA 1460-01-32-6-7-67)	1.90	1.90	0.00
		PB-1638	0.50	0.00	-0.50
		PUSA - 1121 (PUSA SUGANDH-4)	90.00	52.00	-38.00
		PUSA 1592	1.60	2.50	0.90
		PUSA -6 (IET 22290) (PUSA 1612-7-6-5)	3.50	4.50	1.00
		PUSA BASMATI 1637 (IET 24570)	43.40	0.00	-43.40
		PUSA BASMATI 1728	13.45	0.00	-13.45
		PUSA BASMATI-1509 (IET 21960) (PUSA 1509-03-3-9-5)	100.00	50.00	-50.00
		PUSA BASMATI-1609	1.70	1.70	0.00
		PUSA BASMATI-1718 (IET 24565)	82.55	52.00	-30.55
		PUSA BASMATI-6 (PUSA 1401) (IET 18005)	29.20	29.20	0.00
		PUSA SUGANDH-5(IET-17021)	57.85		-57.85
		PUSA-44	0.10	10.00	9.90
		PUSASAMBA 1850	3.00	3.00	0.00
		Total	428.75	206.80	-221.95
Odisha					
28	NRRI-CUTTACK	ANNADA	1.50	1.00	-0.50
		CR BORO DHAN-2 (IET 17612)	0.30	0.50	0.20
		CR DHAN 201 (IET 21924)	1.20	1.00	-0.20
		CR DHAN 202 (IET 21917	2.50	2.50	0.00
		CR DHAN 300 (CR2301-5) (IET 19816)	0.90	0.80	-0.10
		CR DHAN 303 (CR 2649-7)(IET 21589	2.00	2.50	0.50
		CR DHAN 304 (IET 22117)	3.60	5.00	1.40
		CR DHAN 305 (IET 21287)	3.80	4.00	0.20
		CR DHAN 311 (MUKUL)	11.10	10.00	-1.10
		CR DHAN 401(REETA)(IET 19969)	1.50	0.00	-1.50
		CR DHAN 500 (IET 20220)	0.30	0.50	0.20
		CR DHAN 505 (IET 21719)	3.10	1.50	-1.60
		CR DHAN 511	0.60	0.80	0.20
		CR DHAN 701 (IET 20852)(CRHR32)	0.10	0.00	-0.10
		CR DHAN 800 (SWARNA-MAS)	19.80	27.00	7.20
		CR DHAN 801 (IET-25667)	1.50	4.00	2.50
		CR DHAN 910	0.60	0.00	-0.60
		CR DHAN-10 (IET 18312)	1.00	1.00	0.00
		CR DHAN-100	6.35	0.00	-6.35
		CR DHAN-101	12.35	12.00	-0.35
		CR 1018 (Gayatri) IET 8022	1.60	5.00	3.40
		CR DHAN-203	11.80	10.00	-1.80
		CR DHAN-204 (IET 21692)	3.00	2.50	-0.50
		CR DHAN-207	0.30	1.00	0.70
		CR DHAN-209	1.00	1.00	0.00
		CR DHAN-301	17.50	10.00	-7.50
		CR DHAN-307	9.90	10.00	0.10
		CR DHAN-310	23.40	25.00	1.60
		CR DHAN-405	1.00	1.00	0.00
		CR DHAN-407	0.20	0.00	-0.20
		CR DHAN-409	15.10	10.00	-5.10
		CR DHAN-506	0.30	0.80	0.50
		CR DHAN-508	25.40	20.00	-5.40

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
		CR DHAN-601	31.45	25.00	-6.45
		CR DHAN-909	30.00	0.00	-30.00
		CR SUGANDH DHAN 907 (IET 21044) (CR 2616- 3- 3-3-1))	10.00	0.00	-10.00
		CR SUGANDH DHAN 998	0.30	0.00	-0.30
		CR-1009	0.70	0.80	0.10
		CR-1009 SUB-1	23.50	19.00	-4.50
		GEETANJALI (CRM-2007-1) (IET-17276)	1.00	1.00	0.00
		LUNASAMPAD (IET 19470)	1.30	0.40	-0.90
		LUNASUWARNA (IET 18697)	1.00	0.40	-0.60
		LUNISREE	0.50	0.00	-0.50
		NAVEEN (CR-749-20-2) (IET-14461)	5.50	5.00	-0.50
		NRRI SUPER RICE	0.20	0.00	-0.20
		PHALGUNI (IET 18720) CRAC 2224-1041)	0.50	1.00	0.50
		POOJA (IET-12241)	30.20	32.50	2.30
		SAMBA SUB-1 (IET 21248)	14.30	4.00	-10.30
		SARALA CR-260-77 (IET-10279)	3.00	5.50	2.50
		SATYABHAMA	6.00	5.00	-1.00
		SUGANDH DHAN-908	0.40	0.00	-0.40
		SWARANA-SUB 1 (CR 2539-1) IET-20266	106.70	75.00	-31.70
		VARSHADHAN (CRLC-899)(IET-16481)	2.50	1.40	-1.10
		GOPINATH (CR DHAN 206)	3.00	2.50	-0.50
		Total	456.65	348.90	-107.75
29	OUAT, Bhubaneswar*	ASHUTHOSH	2.00	2.00	0.00
		HASANTA	3.00	20.00	17.00
		IMPROVED LALAT	10.10	0.00	-10.10
		KHANDAGIRI	3.00	4.00	1.00
		LALAT (IET-9947)	15.50	15.50	0.00
		MANDAKINI (OR 2077-4)(IET 17847)	0.50	0.50	0.00
		PARIJAT (IET-2684)	1.00	1.00	0.00
		PRATIBHA	5.00	5.00	0.00
		PRATIKSHYA (ORS 201-5)(IET-15191)	24.50	27.00	2.50
		RANI DHAN (IET-19148)	8.10	9.10	1.00
		Total	72.70	84.10	11.40
30	SSTL, BBSR, Govt of Odisha	KALACHAMPA	26.20	96.10	69.90
		Total	26.20	96.10	69.90
Punjab					
31	PAU, Ludhiana	PAU-201	7.75	0.00	-7.75
		PR 121	28.80	38.00	9.20
		PR 122	10.35	16.00	5.65
		PR 127	7.00	13.00	6.00
		PR-113	0.50	5.00	4.50
		PR-114	0.40	4.00	3.60
		PR-118	9.40	12.70	3.30
		PR-123	0.50	1.00	0.50
		PR-124	7.15	14.00	6.85
		PR-125	0.40	0.00	-0.40
		PR-126	19.60	20.00	0.40
		PR-128	8.00	10.00	2.00

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
		PR-129	4.35	6.00	1.65
		PR-130	0.60	0.00	-0.60
		PR-30	0.60	0.00	-0.60
		PUNJAB BASMATI 4	0.05	1.00	0.95
		PUNJAB BASMATI 5	0.05	1.00	0.95
		<b>Total</b>	<b>105.50</b>	<b>141.70</b>	<b>36.20</b>
<b>Rajasthan</b>					
32	MPUAT, Kota	PRATAP -1 (RSK - 1091 - 10 -1-1)	0.10	0.10	0.00
		<b>Total</b>	<b>0.10</b>	<b>0.10</b>	<b>0.00</b>
<b>Tamil Nadu</b>					
33	TNAU, Coimbatore	CO 51	30.80	141.75	110.95
		CO-43 SUB-1	0.50	0.50	0.00
		<b>Total</b>	<b>31.30</b>	<b>142.25</b>	<b>110.95</b>
<b>Telangana</b>					
34	ICAR-IIRR, Hyderabad	BINA DHAN-10	1.10	1.00	-0.10
		BINADHAN-12	0.30	0.30	0.00
		BINADHAN-17	25.50	25.00	-0.50
		BINADHAN-69	0.10	0.10	0.00
		BINADHAN-75	0.10	0.10	0.00
		CIHERANG SUB-1	16.00	28.00	12.00
		DHANARANI	0.20	1.00	0.80
		DRR DHAN 50 (IET 25671) (DRT TOLERANT)	28.80	7.60	-21.20
		DRR DHAN-45 (IET 23832)	14.80	15.00	0.20
		DRR-39	6.00	2.50	-3.50
		DRR-41	0.25	0.25	0.00
		DRR-43	10.65	2.50	-8.15
		DRR-44	44.40	50.00	5.60
		DRR-45	0.10	2.00	1.90
		DRR-46	2.60	2.00	-0.60
		DRR-48	2.10	3.00	0.90
		DRR-49	0.10	1.20	1.10
		DRR-51	4.10	18.00	13.90
		IET-5656	1.30	1.50	0.20
		IMPROVED SAMBA MAHSURI	1.60	200.00	198.40
		IR-64 DRT-1 (DRR DHAN-42)	115.00	160.00	45.00
		JAYA	9.50	4.00	-5.50
		RASI (IET- 1444)	0.50	0.50	0.00
		SAMPADA (IET 19424)	30.90	1.80	-29.10
		<b>Total</b>	<b>316.00</b>	<b>527.35</b>	<b>211.35</b>
35	PJTSAU, Hyderabad	ERRA MALLELU (WGL-20471)	1.00	30.00	29.00
		JGL 11470 (JAGTIAL MAHSURI)	50.00	56.00	6.00
		JGL-1798	0.50	71.00	70.50
		JGL-18047 (BATHUKAMMA)	73.90	101.00	27.10
		JGL-24423	3.00	153.00	150.00
		KNM 733	1.50	27.60	26.10
		KNM-118	93.50	152.75	59.25
		KUNARAM SANNALU	0.30	152.75	152.45
		RNR-1446	0.30	5.00	4.70
		RNR-15048 (TELANGANA SONA)	103.00	349.80	246.80
		SHOBHINI (RNR-2354) (IET- 21260)	2.00	3.00	1.00

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
		SUGANDHA SAMBA (RNR-2465)	0.10	3.00	2.90
		TELLAHAMSA	2.00	20.00	18.00
		WGL-915	1.50	7.00	5.50
		<b>Total</b>	<b>332.60</b>	<b>1131.90</b>	<b>799.30</b>
<b>Uttarakhand</b>					
36	GBPUAT, Pantnagar	GOVIND	2.00	5.46	3.46
		PANT BASMATI-2	0.10	0.10	0.00
		PANT DHAN-18 (IET 17920) (UPRI 99-1)	1.20	10.74	9.54
		PANT DHAN-24	10.45	42.97	32.52
		PANT DHAN-26	0.30	4.28	3.98
		PANT-4	0.15	9.87	9.72
		<b>Total</b>	<b>14.20</b>	<b>73.42</b>	<b>59.22</b>
37	VIHA, Almora	VL DHAN 157 (VL 31611) (IET 22292)	2.50	1.30	-1.20
		VL DHAN 158	2.30	5.30	3.00
		VL DHAN 68 (VL 31611) (IET 22283)	8.00	10.50	2.50
		VL.DHAN 85 (IET-16455) (VL-3613)	0.60	0.60	0.00
		<b>Total</b>	<b>13.40</b>	<b>17.70</b>	<b>4.30</b>
<b>Uttar Pradesh</b>					
38	NDUAT, Faizabad / NDUAT Ayodhya	MUKTASHREE (IET 21845)	1.00	0.00	-1.00
		NARENDRA-8002 (IET-15848)	5.00	0.00	-5.00
		NDR 2064 (IET 17475)	0.30	0.00	-0.30
		NDR-3112	0.60	0.00	-0.60
		SARJOO-52	0.30	0.00	-0.30
		<b>Total</b>	<b>7.20</b>	<b>0.00</b>	<b>-7.20</b>
39	BHU, Varanasi	HUR 1304 (MALVIYA DHAAN 1304)	1.50	10.70	9.20
		HUR 1309 (MALVIYA SUGANDH DHAN-1309)	1.50	10.50	9.00
		HUR-917	5.00	22.10	17.10
		<b>Total</b>	<b>8.00</b>	<b>43.30</b>	<b>35.30</b>
40	SVBAUA& T Meerut	VALLABH BASMATI-24	0.30	11.45	11.15
		<b>Total</b>	<b>0.30</b>	<b>11.45</b>	<b>11.15</b>
41	SHUATS, Prayagraj, UP	SHIATS DHAN -1 (AAIR 2) (IET 20928)	7.10	7.10	0.00
		SHIATS DHAN 2 (AAIR 203)	3.50	3.50	0.00
		SHIATS DHAN 3 (AAIR 205) (IET 22522)	5.00	5.00	0.00
		<b>Total</b>	<b>15.60</b>	<b>15.60</b>	<b>0.00</b>
<b>West Bengal</b>					
42	RRS, Chinsurah	AJIT	8.50	8.50	0.00
		BIDHAN SURUCHI ( IET 25701)	1.00	0.00	-1.00
		BNKR-1 (DHIREN) IET 20760)	4.25	5.00	0.75
		CHINSURAH NONA - 2 (GOSABA- 6) ( IET-21943 )	1.00	1.50	0.50
		CHINSURAH RICE (IET 19140)(CNI 383-5-11)	1.60	1.60	0.00
		CN1272-55-105 (IET-19886)	0.50	2.50	2.00
		CNR-2 (IET 20235)	1.50	1.50	0.00
		KHITISH (IET-4094)	3.00	3.10	0.10
		MANISHA (IET-23770)	0.20	0.25	0.05
		SABITA (IET-8970)	2.50	3.00	0.50
		SHATABDI (IET-4786)	28.10	57.70	29.60
		<b>Total</b>	<b>52.15</b>	<b>84.65</b>	<b>32.50</b>
43		DHRUBA (IET-20761)	3.00	3.20	0.20



S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
	RRS, Bankura	PUSPA (IET 17509)	2.00	2.00	0.00
		SAMPRIITI (BNKR-B12) (IET-21987)	2.05	2.10	0.05
		DHIREN (IET 20760)	3.00	5.00	2.00
		UTTAR SONA (UBKVR-1) (IET-24171)	1.00	1.00	0.00
		Total	11.05	13.30	2.25
44	BCKVV, Nadia	GONTRA BIDHAN-1 (IET 17430)	39.50	41.00	1.50
		GONTRA BINDHAN-3 (IET 22752)	18.70	36.00	17.30
		GONTRA BINDHAN-4	0.30	0.00	-0.30
		Total	58.50	77.00	18.50
Total (A)			4165.20	9214.36	5049.16

### Hybrids

S. No	Name of the centre	Name of variety	Allocation as per BSP-1	Production	Surplus (+) Deficit (-)
1	BSKV, Dapoli	Sahayadri 5 (A line)	0.15	0.15	0.00
		Sahayadri 5 (B line)	0.05	0.45	0.40
		Sahayadri 5 (R line)	0.05	0.50	0.45
		Total	0.25	1.10	0.85
2	UAS, Bangalore	KRH 4 (A-line)	0.05	0.55	0.50
		KRH 4 (B-line)	0.02	0.02	0.00
		KRH 4 (R-line)	0.02	1.00	0.98
		Total	0.09	1.57	1.48
3	ICAR-IIRR, Hyderabad	DRRH 2 (A line)	0.10	0.10	0.00
		DRRH 2 (B line)	0.10	0.10	0.00
		DRRH 2 (R line)	0.10	0.10	0.00
		Total	0.30	0.30	0.00
4	ICAR-NRRI, Cuttack	CRMS 32 A	0.18	0.00	-0.18
		CRMS 32 B	0.09	0.00	-0.09
		Total	0.27	0.00	-0.27
Total (B)			0.91	2.97	2.06
Total (A+B)			4166.11	9217.33	5051.22

### Appendix-11

#### VARIETY WISE BREEDER SEED PRODUCTION DURING KHARIF, 2020 (AS PER DAC INDENT)

(Quantity in Quintals)

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
1	Abhishek (IET - 17868)(rr-272-829)	3.22	9.20	5.98	CRURRS, Hazaribagh
2	Ajit	8.50	8.50	0.00	RRS, Chinsurah
3	Amara (MTU-1064)	6.60	51.00	44.40	ANGRAU, Guntur
4	Anjali (IET-16430, RR-347-166)	0.50	9.20	8.70	CRURRS, Hazaribagh
5	Annada	1.50	1.00	-0.50	NRRI-CUTTACK
6	Ashuthosh	2.00	2.00	0.00	OUAT, Bhubaneswar
7	Athira (PTB-51)	0.50	2.00	1.50	KAU, Pattambi
8	Badshabhog selection-1	16.00	9.30	-6.70	IGKV, Raipur

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
9	Bahadur sub-1	51.50	28.29	-23.21	RARS, Titabar (AAU, Jorhat)
10	Bamleshwari (IET no.14444, R 738-1-64-2-2)	10.00	11.70	1.70	IGKV, Raipur
11	Basmati-370	10.00	5.00	-5.00	RRS, Kaul
12	Basmati-564	0.10	0.10	0.00	SKUAST, Chatha
13	Bhadra (MO-4)	3.50	0.50	-3.00	RRS, Moncompu
14	Bharani (NLR 30491)	4.00	0.00	-4.00	ANGRAU, Guntur
15	Bhogavati	0.60	5.50	4.90	ARS, Radhanagari
16	Bidhan Suruchi (IET 25701)	1.00	0.00	-1.00	RRS, Chinsurah
17	Bina Dhan-10	1.10	1.00	-0.10	ICAR-IIRR, Hyderabad.
18	Bina Dhan-12	0.30	0.30	0.00	ICAR-IIRR, Hyderabad.
19	Bina Dhan-17	25.50	25.00	-0.50	ICAR-IIRR, Hyderabad.
20	Bina Dhan-69	0.10	0.10	0.00	ICAR-IIRR, Hyderabad.
21	Bina Dhan-75	0.10	0.10	0.00	ICAR-IIRR, Hyderabad.
22	Birsa Mati	1.65	2.00	0.35	BAU, Ranchi
23	Birsa Vikas Dhan - 111 (IET 19848) (PY - 84)	1.65	1.70	0.05	BAU, Ranchi
24	Birsa Vikas Dhan - 203	2.10	2.20	0.10	BAU, Ranchi
25	Birsa Vikas Dhan-109	1.65	1.70	0.05	BAU, Ranchi
26	Birsa Vikas Dhan-110	1.65	1.75	0.10	BAU, Ranchi
27	Birsa Vikas Sugandha - 1 (IET 18941)	1.65	2.20	0.55	BAU, Ranchi
28	Bnkr-1 (Dhiren) (IET 20760)	4.25	5.00	0.75	RRS, Chinsurah
29	BPT 5204	43.50	0.00	-43.50	ANGRAU, Guntur
30	BPT-3291 (Sonamasuri)	4.00	0.00	-4.00	ANGRAU, Guntur
31	BR-2655	2.50	6.00	3.50	UAS, Bengaluru
32	C.g. Sugandhi Bhog	20.00	20.10	0.10	IGKV, Raipur
33	Cg Madhuraj Dhan-55	15.30	15.50	0.20	IGKV, Raipur
34	Chandra (IET 23409) (MTU-1153)	26.50	70.00	43.50	ANGRAU, Guntur
35	Chandrasini (IET - 16800)	10.00	13.50	3.50	IGKV, Raipur
36	Chhattisgarh Dev Bhog	10.00	18.00	8.00	IGKV, Raipur
37	Chhattisgarh Zinc Rice-1	22.20	22.50	0.30	IGKV, Raipur
38	Chhattisgarh Zinc Rice-2	30.00	30.80	0.80	IGKV, Raipur
39	Chinsurah Nona - 2 (Gosaba- 6) (IET -21943)	1.00	1.50	0.50	RRS, Chinsurah
40	Chinsurah Rice (IET 19140) (CNI 383-5-11)	1.60	1.60	0.00	RRS, Chinsurah
41	Ciherang Sub-1	16.00	28.00	12.00	ICAR-IIRR, Hyderabad.
42	CN1272-55-105 (IET -19886)	0.50	2.50	2.00	RRS, Chinsurah
43	CNR-2 (IET 20235)	1.50	1.50	0.00	RRS, Chinsurah
44	Co 51	30.80	141.75	110.95	TNAU, Coimbatore
45	Co-43 Sub-1	0.50	0.50	0.00	TNAU, Coimbatore
46	Cotondora Sannalu (MTU-1010)	201.20	2.80	-198.40	ANGRAU, Guntur
47	CR 1018 (Gayatri) IET 8022	1.60	5.00	3.40	NRRI-Cuttack
48	CR Boro Dhan-2 (IET 17612)	0.30	0.50	0.20	NRRI-Cuttack
49	CR Dhan 201 (IET 21924)	1.20	1.00	-0.20	NRRI-Cuttack
50	CR Dhan 202 (IET 21917)	2.50	2.50	0.00	NRRI-Cuttack
51	CR Dhan 300 (CR2301-5) (IET 19816)	0.90	0.80	-0.10	NRRI-Cuttack
52	CR Dhan 303 (CR 2649-7) (IET 21589)	2.00	2.50	0.50	NRRI-Cuttack
53	CR Dhan 304 (IET 22117)	3.60	5.00	1.40	NRRI-Cuttack
54	CR Dhan 305 (IET 21287)	3.80	4.00	0.20	NRRI-Cuttack
55	CR Dhan 311 (Mukul)	11.10	10.00	-1.10	NRRI-Cuttack
56	CR Dhan 401(Reeta) (IET 19969)	1.50	0.00	-1.50	NRRI-Cuttack
57	CR Dhan 500 (IET 20220)	0.30	0.50	0.20	NRRI-Cuttack
58	CR Dhan 505 (IET 21719)	3.10	1.50	-1.60	NRRI-Cuttack

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
59	CR Dhan 511	0.60	0.80	0.20	NRRI-Cuttack
60	CR Dhan 701 (IET 20852) (CRHR32)	0.10	0.00	-0.10	NRRI-Cuttack
61	CR Dhan 800 (Swarna-Mas)	19.80	27.00	7.20	NRRI-Cuttack
62	CR Dhan 801 (IET-25667)	1.50	4.00	2.50	NRRI-Cuttack
63	CR Dhan 910	0.60	0.00	-0.60	NRRI-Cuttack
64	CR Dhan -10 (IET8312)	1.00	1.00	0.00	NRRI-Cuttack
65	CR Dhan -100	6.35	0.00	-6.35	NRRI-Cuttack
66	CR Dhan -101	12.35	12.00	-0.35	NRRI-Cuttack
67	CR Dhan -203	11.80	10.00	-1.80	NRRI-Cuttack
68	CR Dhan -204 (IET 21692)	3.00	2.50	-0.50	NRRI-Cuttack
69	CR Dhan -207	0.30	1.00	0.70	NRRI-Cuttack
70	CR Dhan -209	1.00	1.00	0.00	NRRI-Cuttack
71	CR Dhan -301	17.50	10.00	-7.50	NRRI-Cuttack
72	CR Dhan -307	9.90	10.00	0.10	NRRI-Cuttack
73	CR Dhan -310	23.40	25.00	1.60	NRRI-Cuttack
74	CR Dhan -405	1.00	1.00	0.00	NRRI-Cuttack
75	CR Dhan -407	0.20	0.00	-0.20	NRRI-Cuttack
76	CR Dhan -409	15.10	10.00	-5.10	NRRI-Cuttack
77	CR Dhan -506	0.30	0.80	0.50	NRRI-Cuttack
78	CR Dhan -508	25.40	20.00	-5.40	NRRI-Cuttack
79	CR Dhan -601	31.45	25.00	-6.45	NRRI-Cuttack
80	CR Dhan -909	30.00	0.00	-30.00	NRRI-Cuttack
81	CR Sugandh Dhan 907 (IET 21044) (CR 2616- 3- 3-3-1)	10.00	0.00	-10.00	NRRI-Cuttack
82	CR Sugandh Dhan 998	0.30	0.00	-0.30	NRRI-Cuttack
83	CR-1009	0.70	0.80	0.10	NRRI-Cuttack
84	CR-1009 Sub-1	23.50	19.00	-4.50	NRRI-Cuttack
85	CSR 30	0.10	7.95	7.85	CSSRI, Karnal
86	CSR 36 (Naina) (IET17340)	8.80	9.00	0.20	CSSRI, Karnal
87	CSR 43	1.00	5.40	4.40	CSSRI, Karnal
88	CSR 46 (CSR 2k-262)	1.50	5.40	3.90	CSSRI, Karnal
89	CSR 52 (CSR 12 b 23)	0.60	2.00	1.40	CSSRI, Karnal
90	CSR 56 (IET 24537)	1.25	4.80	3.55	CSSRI, Karnal
91	CSR 60 (IET 25378)	0.25	5.20	4.95	CSSRI, Karnal
92	Danteshwari (IET 15450, R 302-111)	10.00	18.90	8.90	IGKV, Raipur
93	Dhanarasi	0.20	1.00	0.80	ICAR-IIRR, Hyderabad.
94	Dhiren (IET 20760)	3.00	5.00	2.00	RRS, Bankura
95	Dhruba (IET 20761)	3.00	3.20	0.20	RRS, Bankura
96	DRR Dhan 50 (IET 25671) (DRT tolerant)	28.80	7.60	-21.20	ICAR-IIRR, Hyderabad.
97	DRR Dhan 45 (IET 23832)	14.80	15.00	0.20	ICAR-IIRR, Hyderabad.
98	DRR Dhan 39	6.00	2.50	-3.50	ICAR-IIRR, Hyderabad.
99	DRR Dhan 41	0.25	0.25	0.00	ICAR-IIRR, Hyderabad.
100	DRR Dhan 43	10.65	2.50	-8.15	ICAR-IIRR, Hyderabad.
101	DRR Dhan 44	44.40	50.00	5.60	ICAR-IIRR, Hyderabad.
102	DRR Dhan 45	0.10	2.00	1.90	ICAR-IIRR, Hyderabad.
103	DRR Dhan 46	2.60	2.00	-0.60	ICAR-IIRR, Hyderabad.
104	DRR Dhan 48	2.10	3.00	0.90	ICAR-IIRR, Hyderabad.
105	DRR Dhan 49	0.10	1.20	1.10	ICAR-IIRR, Hyderabad.
106	DRR Dhan 51	4.10	18.00	13.90	ICAR-IIRR, Hyderabad.
107	Dubraj Selection-1	20.50	24.00	3.50	IGKV, Raipur
108	Erra Mallelu (WGL-20471)	1.00	30.00	29.00	PJTSAU, Hyderabad
109	Gar-14	0.60	2.25	1.65	GAU, Nawagam
110	Geetanjali (CRM-2007-1) (IET 17276)	1.00	1.00	0.00	NRRI-Cuttack

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
111	Gitesh	25.00	48.20	23.20	RARS, Titabar (AAU, Jorhat)
112	Giza-14	4.00	8.00	4.00	SKUAST, Chatha
113	GNR-3	0.50	15.00	14.50	GAU, Nawagam
114	Gontra Bidhan-1 (IET 17430)	39.50	41.00	1.50	BCKVV, Nadia
115	Gontra Bindhan-3 (IET 22752)	18.70	36.00	17.30	BCKVV, Nadia
116	Gontra Bindhan-4	0.30	0.00	-0.30	BCKVV, Nadia
117	Gopinath (CR Dhan 206)	3.00	2.50	-0.50	NRRI-Cuttack
118	Govind	2.00	5.46	3.46	GBPUAT, Pantnagar
119	Hasanta	3.00	20.00	17.00	OUAT, Bhubaneshwar
120	Him Palam Dhan-1	5.10	5.25	0.15	CSKHPKV, Malan
121	HKR 127 (HKR-95-222)	2.70	3.00	0.30	RRS, Kaul
122	HKR 128	0.25	1.00	0.75	RRS, Kaul
123	HKR 47	7.00	5.00	-2.00	RRS, Kaul
124	HKR 48	0.50	1.00	0.50	RRS, Kaul
125	HPR 2143	10.00	10.20	0.20	CSKHPKV, Malan
126	HPR 1068	5.00	7.18	2.18	CSKHPKV, Malan
127	HPR 2720	5.00	3.06	-1.94	CSKHPKV, Malan
128	HUR 1304 (Malviya Dhan 1304)	1.50	10.70	9.20	BHU, Varanasi
129	HUR 1309 (Malviya Sugandh Dhan-1309)	1.50	10.50	9.00	BHU, Varanasi
130	HUR 917	5.00	22.10	17.10	BHU, Varanasi
131	IET 5656	1.30	1.50	0.20	ICAR-IIRR, Hyderabad.
132	IGKVR 1 (IET 19569)	0.30	0.00	-0.30	IGKV, Raipur
133	IGKVR 2 (IET 19795)	15.00	16.50	1.50	IGKV, Raipur
134	Improved Pusa Basmati-1 (IET18990) (Pusa 1460-01-32-6-7-67)	1.90	1.90	0.00	ICAR-IARI Regional Station, Karnal
135	Improved Chinnor	10.30	13.85	3.55	JNKVV, Jabalpur
136	Improved Jeera Shankar	10.30	10.32	0.02	JNKVV, Jabalpur
137	Improved Lalat	10.10	0.00	-10.10	OUAT, Bhubaneshwar
138	Improved Samba Mahsuri	1.60	200.00	198.40	ICAR-IIRR, Hyderabad.
139	Indira Aerobic- 1 (R 1570-2649-1-1546-1) (IET 21686)	30.50	47.70	17.20	IGKV, Raipur
140	Indira Barani Dhan-1 (RF-17-38-70) (IET 21205)	22.00	26.70	4.70	IGKV, Raipur
141	Indrayani (IET 12897)	15.40	50.00	34.60	ARS, Vadagaon
142	Inglongkheri	30.00	0.00	-30.00	RARS, Titabar (AAU, Jorhat)
143	Intan	1.50	2.50	1.00	ARS, Mugad
144	IR 36	10.00	15.30	5.30	IGKV, Raipur
145	IR 64	44.00	51.00	7.00	IGKV, Raipur
146	IR-64 DRT-1 (DRR Dhan-42)	115.00	160.00	45.00	ICAR-IIRR, Hyderabad.
147	Jalashri (TTB 202-3)	30.00	0.00	-30.00	RARS, Titabar (AAU, Jorhat)
148	Jaldbi (IET 17153)	2.00	2.00	0.00	IGKV, Raipur
149	Jalkunwari (TTB 202-4)	30.00	0.00	-30.00	RARS, Titabar (AAU, Jorhat)
150	Jammu Basmati-129 (SJR-129-2-2) (IET 24597)	1.10	0.37	-0.73	SKUAST, Chatha
151	Jaya	9.50	4.00	-5.50	ICAR-IIRR, Hyderabad.
152	JGL 11470 (Jagtial Mahsuri)	50.00	56.00	6.00	PJTSAU, Hyderabad
153	JGL 1798	0.50	71.00	70.50	PJTSAU, Hyderabad
154	JGL 18047 (Bathukamma)	73.90	101.00	27.10	PJTSAU, Hyderabad
155	JGL 24423	3.00	153.00	150.00	PJTSAU, Hyderabad
156	JR 767	11.80	12.00	0.20	JNKVV, Jabalpur

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
157	IR 81	10.90	905.34	894.44	JNKVV, Jabalpur
158	IRB 1	23.00	40.50	17.50	JNKVV, Jabalpur
159	IRH 19	5.00	5.00	0.00	JNKVV, Jabalpur
160	Jyothi	13.40	14.00	0.60	KAU, Pattambi
161	K 39	2.00	2.10	0.10	SKUAT, Khudwani
162	K-448	2.00	2.20	0.20	SKUAT, Khudwani
163	Kalachampa	26.20	96.10	69.90	SSTL, BBSR, Govt of Odisha
164	Kanaklata	25.65	0.00	-25.65	RARS, Titabar (AAU, Jorhat)
165	Karjat-3	2.50	4.95	2.45	RARS, Karjat
166	Karjat-5	0.60	3.60	3.00	RARS, Karjat
167	Karjat-7	1.50	8.10	6.60	RARS, Karjat
168	Karjat-8	1.60	3.78	2.18	RARS, Karjat
169	Karjat-9	0.60	5.40	4.80	RARS, Karjat
170	Khandagiri	3.00	4.00	1.00	OUAT, Bhubaneswar
171	Khitish (IET 4094)	3.00	3.10	0.10	RRS, Chinsurah
172	KMD-2 (Abhilash)	1.50	2.50	1.00	ARS, Mugad
173	KNM 733	1.50	27.60	26.10	PJTSAU, Hyderabad
174	KNM 118	93.50	152.75	59.25	PJTSAU, Hyderabad
175	Kranti ( R 2022)	0.50	2761.29	2760.79	JNKVV, Jabalpur
176	Kunaram Sannalu	0.30	152.75	152.45	PJTSAU, Hyderabad
177	Lalat (IET 9947)	15.50	15.50	0.00	OUAT, Bhubaneswar
178	Lunasampad (IET 19470)	1.30	0.40	-0.90	NRRI-Cuttack
179	Lunasuwarna (IET 18697)	1.00	0.40	-0.60	NRRI-Cuttack
180	Lunisree	0.50	0.00	-0.50	NRRI-Cuttack
181	Mahamaya (IET 10749)	85.00	85.80	0.80	IGKV, Raipur
182	Maheswari (IGRKVR1244)	20.00	20.10	0.10	IGKV, Raipur
183	Mahisagar	0.50	5.50	5.00	GAU, Nawagam
184	Mandakini (OR 2077-4) (IET 17847)	0.50	0.50	0.00	OUAT, Bhubaneswar
185	Manisha (IET 23770)	0.20	0.25	0.05	RRS, Chinsurah
186	Maruteru Sannalu (MTU-1006, IET 14348)	1.00	0.00	-1.00	ANGRAU, Guntur
187	MO 21 (Pratiksha)	0.75	2.50	1.75	RRS, Moncompu
188	MTU 1001 (Vijetha )	86.20	55.00	-31.20	ANGRAU, Guntur
189	MTU 1075 (IET 18482)	14.00	23.00	9.00	ANGRAU, Guntur
190	MTU 1078	3.00	0.00	-3.00	ANGRAU, Guntur
191	MTU 1140 (Bheema)	8.30	15.00	6.70	ANGRAU, Guntur
192	MTU 1156	87.90	5.80	-82.10	ANGRAU, Guntur
193	MTU 2116	3.00	0.00	-3.00	ANGRAU, Guntur
194	MTU 1061	7.20	25.00	17.80	ANGRAU, Guntur
195	MTU 1081	0.10	0.00	-0.10	ANGRAU, Guntur
196	MTU 1121(Sri Dhruthi)	30.60	40.00	9.40	ANGRAU, Guntur
197	MTU 1155	3.00	0.80	-2.20	ANGRAU, Guntur
198	MTU 1172	1.00	7.20	6.20	ANGRAU, Guntur
199	MTU 1187	0.60	0.00	-0.60	ANGRAU, Guntur
200	MTU 1194	0.60	0.00	-0.60	ANGRAU, Guntur
201	MTU 1210	3.00	1.20	-1.80	ANGRAU, Guntur
202	MTU 3626	1.50	3.00	1.50	ANGRAU, Guntur
203	MTU 7029	119.30	96.00	-23.30	ANGRAU, Guntur
204	Muktashree (IET 21845)	1.00	0.00	-1.00	NDUAT, Faizabad
205	Narendra-8002 (IET 15848)	5.00	0.00	-5.00	NDUAT, Faizabad
206	Naveen (CR-749-20-2) (IET-14461)	5.50	5.00	-0.50	NRRI-Cuttack
207	NDLR-7	60.00	0.00	-60.00	ANGRAU, Guntur
208	NDR 2064 (IET 17475)	0.30	0.00	-0.30	NDUAT, Faizabad

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
209	NDR 3112	0.60	0.00	-0.60	NDUAT, Faizabad
210	Nellore Mahsuri (NLR 34449)	4.00	0.00	-4.00	ANGRAU, Guntur
211	NLR 34449	4.00	0.00	-4.00	ANGRAU, Guntur
212	NRRI Super Rice	0.20	0.00	-0.20	NRRI-Cuttack
213	Pant Basmati-2	0.10	0.10	0.00	GBPUAT, Pantnagar
214	Pant Dhan-18 (IET 17920) (UPRI 99-1)	1.20	10.74	9.54	GBPUAT, Pantnagar
215	Pant Dhan-24	10.45	42.97	32.52	GBPUAT, Pantnagar
216	Pant Dhan-26	0.30	4.28	3.98	GBPUAT, Pantnagar
217	Pant-4	0.15	9.87	9.72	GBPUAT, Pantnagar
218	Pardhiva (NLR 33892)	5.00	0.00	-5.00	ANGRAU, Guntur
219	Parijat (IET 2684)	1.00	1.00	0.00	OUAT, Bhubaneshwar
220	PAU-201	7.75	0.00	-7.75	PAU, Ludhina
221	PB 1638	0.50	0.00	-0.50	ICAR-IARI Regional Station, Karnal
222	PDKV Tilak (SYE-503-78-34-2)	1.50	5.00	3.50	ARS, Sindewahi
223	Phalguni (IET 18720) CRAC 2224-1041)	0.50	1.00	0.50	NRRI-Cuttack
224	Phule Samruddhi (VDN-99-29)	1.00	10.00	9.00	ARS, Vadagaon
225	PKV HMT	30.60	45.00	14.40	ARS, Sindewahi
226	PKV Kisan	1.00	2.00	1.00	ARS, Sindewahi
227	Pooja (IET 12241)	30.20	32.50	2.30	NRRI-Cuttack
228	Poornima (IET-12284,R-281-PP-31-1)	1.50	2.55	1.05	IGKV, Raipur
229	PR 121	28.80	38.00	9.20	PAU, Ludhina
230	PR 122	10.35	16.00	5.65	PAU, Ludhina
231	PR 127	7.00	13.00	6.00	PAU, Ludhina
232	PR 113	0.50	5.00	4.50	PAU, Ludhina
233	PR 114	0.40	4.00	3.60	PAU, Ludhina
234	PR 118	9.40	12.70	3.30	PAU, Ludhina
235	PR 123	0.50	1.00	0.50	PAU, Ludhina
236	PR 124	7.15	14.00	6.85	PAU, Ludhina
237	PR 125	0.40	0.00	-0.40	PAU, Ludhina
238	PR 126	19.60	20.00	0.40	PAU, Ludhina
239	PR 128	8.00	10.00	2.00	PAU, Ludhina
240	PR 129	4.35	6.00	1.65	PAU, Ludhina
241	PR 130	0.60	0.00	-0.60	PAU, Ludhina
242	PR 30	0.60	0.00	-0.60	PAU, Ludhina
243	Prabhat	1.00	0.00	-1.00	ANGRAU, Guntur
244	Pratap -1 (RSK - 1091 - 10 -1-1)	0.10	0.10	0.00	MPUAT, Kota
245	Pratibha	5.00	5.00	0.00	OUAT, Bhubaneshwar
246	Pratikshya (ORS 201-5)(IET 15191)	24.50	27.00	2.50	OUAT, Bhubaneshwar
247	Punjab Basmati 4	0.05	1.00	0.95	PAU, Ludhina
248	Punjab Basmati 5	0.05	1.00	0.95	PAU, Ludhina
249	Pusa 1121 (Pusa Sugandh-4)	110.00	72.00	-38.00	BEDF, New Delhi, IARI, Regional Station, Karnal
250	Pusa 1592	2.18	5.00	2.82	DSST & IARI New Delhi , ICAR-IARI Regional Station, Karnal
251	Pusa 6 (IET 22290) (Pusa 1612-7-6-5)	3.50	4.50	1.00	ICAR-IARI Regional Station, Karnal
252	Pusa Basmati 1637 (IET 24570)	43.40	0.00	-43.40	ICAR-IARI Regional Station, Karnal
253	Pusa Basmati 1728	13.45	0.00	-13.45	ICAR-IARI Regional Station, Karnal
254	Pusa Basmati-1509 (IET 21960) (Pusa 1509-03-3-9-5)	129.00	50.00	-79.00	BEDF, New Delhi , IARI Regional Station, Karnal

S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
255	Pusa Basmati-1609	1.70	1.70	0.00	ICAR-IARI Regional Station, Karnal
256	Pusa Basmati-1718 (IET 24565)	82.55	52.00	-30.55	ICAR-IARI Regional Station, Karnal
257	Pusa Basmati-6 (Pusa 1401) (IET 18005)	29.20	29.20	0.00	ICAR-IARI Regional Station, Karnal
258	Pusa sugandh-2(IET 16310, Pusa-204-1-126)	0.40	0.00	-0.40	DSST & IARI New Delhi
259	Pusa sugandh-3(IET 16313, Pusa-2504-1-3-1)	20.50	0.00	-20.50	DSST & IARI New Delhi
260	Pusa Sugandh-5(IET 17021)	124.56	69.50	-55.06	DSST & IARI New Delhi , ICAR-IARI Regional Station, Karnal
261	Pusa-44	0.10	10.00	9.90	ICAR-IARI, Regional Station, Karnal
262	Pusa-6 (IET 22290) (Pusa 1612-7-6-5)	0.60	4.50	3.90	DSST & IARI, New Delhi
263	Pusa Samba 1850	3.00	3.00	0.00	ICAR-IARI, Regional Station, Karnal
264	Puspa (IET 17509)	2.00	2.00	0.00	RRS, Bankura
265	Rajendra Neelam	0.30	45.00	44.70	RAU, Pusa
266	Rajendra Bhagvati	36.50	44.50	8.00	RAU, Pusa
267	Rajendra Kasturi	0.30	6.00	5.70	RAU, Pusa
268	Rajendra Mahsuri-1	54.80	81.00	26.20	RAU, Pusa
269	Rajendra Sweta	20.55	29.00	8.45	RAU, Pusa
270	Rajeswari (IGKVR 1)	45.10	73.50	28.40	IGKV, Raipur
271	Rani Dhan (IET 19148)	8.10	9.10	1.00	OUAT, Bhubaneswar
272	Ranjeet (IET 12554)	1.50	144.80	143.30	RARS, Titabar (AAU, Jorhat)
273	Ranjit Sub -1	54.80	170.00	115.20	RARS, Titabar (AAU, Jorhat)
274	Rashmi (JR-201)	10.00	10.80	0.80	JNKVV, Jabalpur
275	Rasi (IET 1444)	0.50	0.50	0.00	ICAR-IIRR, Hyderabad.
276	Ratnagiri-7	0.30	4.59	4.29	ARS, Ratanagiri
277	Ratnagiri-9	0.60	6.62	6.02	ARS, Ratanagiri
278	RGL 2537	10.50	0.00	-10.50	ANGRAU, Guntur
279	RNR-1446	0.30	5.00	4.70	PJTSAU, Hyderabad
280	RNR-15048 (Telangana Sona)	103.00	349.80	246.80	PJTSAU, Hyderabad
281	Rongkhang	30.00	0.00	-30.00	RARS, Titabar (AAU, Jorhat)
282	RTN-5	3.00	14.40	11.40	ARS, Ratanagiri
283	RTN-8	0.30	9.00	8.70	ARS, Ratanagiri
284	Sabita (IET-8970)	2.50	3.00	0.50	RRS, Chinsurah
285	Sabour Shree (RAU 724-48-33) (IET 18878)	50.20	173.50	123.30	BAU, Sabour
286	Sahbhagi (Sahbhagi Dhan IET-19576)	76.44	164.00	87.56	CRURRS, Hazaribagh
287	Sakoli-9	0.60	1.00	0.40	ARS, Sakoli
288	Samba Sub-1 (IET 21248)	14.30	4.00	-10.30	NRRI-Cuttack
289	Sampada (IET 19424)	30.90	1.80	-29.10	ICAR-IIRR, Hyderabad.
290	Sampriti (BNKR-b12) (IET-21987)	2.05	2.10	0.05	RRS, Bankura
291	Sarala CR-260-77 (IET-10279)	3.00	5.50	2.50	NRRI-Cuttack
292	Sarjoo-52	0.30	0.00	-0.30	NDUAT, Faizabad
293	Satyabhama	6.00	5.00	-1.00	NRRI-Cuttack
294	Setha	0.60	5.00	4.40	BAU, Sabour
295	Shatabdi (IET-4786)	28.10	57.70	29.60	RRS, Chinsurah
296	Shiats Dhan -1 (AAIR 2) (IET 20928)	7.10	7.10	0.00	SHUATS, Allahabad

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S. No	Variety	Allocation	Prod.	Surplus (+) Deficit (-)	Producing centre
297	Shiats Dhan 2 (AAIR 203)	3.50	3.50	0.00	SHUATS, Allahabad
298	Shiats Dhan 3 (AAIR 205) (IET 22522)	5.00	5.00	0.00	SHUATS, Allahabad
299	Shobhini (RNR-2354) (IET 21260)	2.00	3.00	1.00	PJTSAU, Hyderabad
300	SJR-5(IET-19972)	15.00	0.25	-14.75	SKUAST, Chatha
301	Sreyas	0.60	0.00	-0.60	RRS, Monocompu
302	Sugandh Dhan-908	0.40	0.00	-0.40	NRRI-Cuttack
303	Sugandha Samba (MR-2465)	0.10	3.00	2.90	PJTSAU, Hyderabad
304	Swarana-Sub 1 (CR 2539-1) IET-20266	106.70	75.00	-31.70	NRRI-Cuttack
305	Tarun Bhog Selection-1	10.00	7.50	-2.50	IGKV, Raipur
306	Tellahamsa	2.00	20.00	18.00	PJTSAU, Hyderabad
307	Thanu	2.90	3.00	0.10	UAS, Bengaluru
308	Trombey Chattisgarh Dubraj Mutent-1	10.00	24.00	14.00	IGKV, Raipur
309	Tunga (IET-13901)	4.75	5.00	0.25	UAS, Bengaluru
310	Uma (MO-16)	18.75	16.00	-2.75	RRS, Monocompu
311	Uttar Sona (UBKVR-1) (IET-24171)	1.00	1.00	0.00	RRS, Bankura
312	Vallabh Basmati-24	0.30	11.45	11.15	SVBAUA& T Meerut
313	VarshaDhan (CRLC-899) (IET-16481)	2.50	1.40	-1.10	NRRI-Cuttack
314	VishnuBhog Selection-1	15.00	19.80	4.80	IGKV, Raipur
315	VL Dhan 157 (VL 31611) (IET 22292)	2.50	1.30	-1.20	VIHA, Almora
316	VL Dhan 158	2.30	5.30	3.00	VIHA, Almora
317	VL Dhan 68 (VL 31611) (IET 22283)	8.00	10.50	2.50	VIHA, Almora
318	VL Dhan 85 (IET-16455) (VL-3613)	0.60	0.60	0.00	VIHA, Almora
319	WGL-915	1.50	7.00	5.50	PJTSAU, Hyderabad
320	Zinco Rice MS	51.00	52.20	1.20	IGKV, Raipur
<b>Total (A)</b>		<b>4165.20</b>	<b>9214.36</b>	<b>5049.16</b>	

## Hybrids

S.No.	Centre Name	Variety	Target	Production	Surplus (+) Deficit (-)
1	BSKVV, Dapoli	Sahayadri 5 (A line)	0.15	0.15	0.00
		Sahayadri 5 (B line)	0.05	0.45	0.40
		Sahayadri 5 (R line)	0.05	0.50	0.45
		Total	0.25	1.10	0.85
2	UAS, Bangalore	KRH 4 (A-line)	0.05	0.55	0.50
		KRH 4 (B-line)	0.02	0.02	0.00
		KRH 4 (R-line)	0.02	1.00	0.98
		Total	0.09	1.57	1.48
3	ICAR-IIRR, Hyderabad	DRRH 2 (A line)	0.10	0.10	0.00
		DRRH 2 (B line)	0.10	0.10	0.00
		DRRH 2 (R line)	0.10	0.10	0.00
		Total	0.30	0.30	0.00
4	ICAR-NRRI, Cuttack	CRMS 32 A	0.18	0.00	-0.18
		CRMS 32 B	0.09	0.00	-0.09
		Total	0.27	0.00	-0.27
Total (B)			0.91	2.97	2.06
Total (A+B)			4166.11	9217.33	5051.22



### 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 monitoring	Expected date of Harvest	Expected Production (Qtls)	Expected date of availability

**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 the previous 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-13

## Rice varieties and hybrids released during 2020-21

S. No	CVRC/SVRC	States	IET No.	Variety / Hybrid Name	Ecosy stem	Grain Type	Grain Yield	Year of Not.	Notifi.No	Notifi. Date
1	CVRC	CH, MH	25523	CR Dhan 308	IRM	MS	5030	2020	3482 (E)	10-07-2020
2	CVRC	MH, CH	25489	CR Dhan 313	IRM	MS	4725	2020	3482 (E)	10-07-2020
3	CVRC	AS, TR	25692	CR Dhan 602	BORO	LS	5685	2020	3482 (E)	10-07-2020
4	CVRC	HA, JK, UT	25785	PAC 8744+	IRM	LB	6545	2020	3482 (E)	10-07-2020
5	CVRC	DE, HA, UP	26995	Pusa Basmati 1692	SCR	ELS	5258	2020	3482 (E)	10-07-2020
6	CVRC	UT, CH, MH	25745	27P27	IRME	LB	7139	2021	500 (E)	29/01/2021
7	CVRC	TE, KA, AP	26549	28S44	IRM	MS	6524	2021	500 (E)	29/01/2021
8	CVRC	GU, MH	27179	CR Dhan 315	IRM	SB	5022	2021	500 (E)	29/01/2021
9	CVRC	AP, TE, CH, MH, JH, OD, BI, GU, MH	27294	DRR Dhan 53	IRL	MS	5500	2021	500 (E)	29/01/2021
10	CVRC	BI, OD, TE, JH, HA, GU	25653	DRR Dhan 54	Aerobi c	SB	5264	2021	500 (E)	29/01/2021
11	CVRC	BI, CH	26194	DRR Dhan 55	Aerobi c	LB	4974	2021	500 (E)	29/01/2021
12	CVRC	PU, HA	26803	DRR Dhan 56	IRE	LS	5259	2021	500 (E)	29/01/2021
13	CVRC	UP, PU	26999	Indam 100-012	Aroma tic/Ba smati	LS	6653	2021	500 (E)	29/01/2021
14	CVRC	PU, HA, UP, BI, WB	24914	JKRH 2154	IRE	LB	6273	2021	500 (E)	29/01/2021
15	CVRC	CH, MP, MH	26468	JKRH 2354	IRME	LB	7094	2021	500 (E)	29/01/2021
16	CVRC	OD, BI	25856	MTU 1223	RSL	MS	4968	2021	500 (E)	29/01/2021
17	CVRC	AP, TN, MH	26263	MTU 1239	IRL	MS	6268	2021	500 (E)	29/01/2021
18	CVRC	CH, MH	26477	RH 150025	IRE	SB	6742	2021	500 (E)	29/01/2021
19	CVRC	TE, KE	26125	Telangana Vari 3	IRME	MS	7376	2021	500 (E)	29/01/2021
20	CVRC	HP, KA	24197	TRC 2014-8	IRE	LS	5259	2021	500 (E)	29/01/2021
21	CVRC	KA, JH, CH	26178	TRC 2015-5	AERO B	SB	4943	2021	500 (E)	29/01/2021
22	CVRC	HP, ME, UT	25819	VL Dhan 88	HRIR	LB	4963	2021	500 (E)	29/01/2021
23	CVRC	TE, AP, TN, MH	26027	WGL 697	IRM	MS	7040	2021	500 (E)	29/01/2021
24	CVRC	HA, PU, UT, TS, KE, KA	25746	KPH 471	IRME	LS	7626	2020	3482 (E)	10-07-2020
25	SVRC	TN	24249	ADT 54	IRM	MS	6307	2020	3482 (E)	10-07-2020
26	SVRC	CH	26624	Bastar Dhan 1	RUP	LS	4490	2020	3482 (E)	10-07-2020
27	SVRC	AP	27124	Bhavathi	IRE	MS	5270	2020	3482 (E)	10-07-2020
28	SVRC	CH	24956	Chhattisgarh Rice Hybrid 2	IRME	LS	6400	2020	3482 (E)	10-07-2020
29	SVRC	TN	24057	CO 53	RUP	SB	1805	2020	3482 (E)	10-07-2020
30	SVRC	OD	25121	CR Dhan 102	RUP	SB	3902	2020	3482 (E)	10-07-2020

*Draft Proceedings of 56<sup>th</sup> Annual Rice Research Group Meeting, 2021*

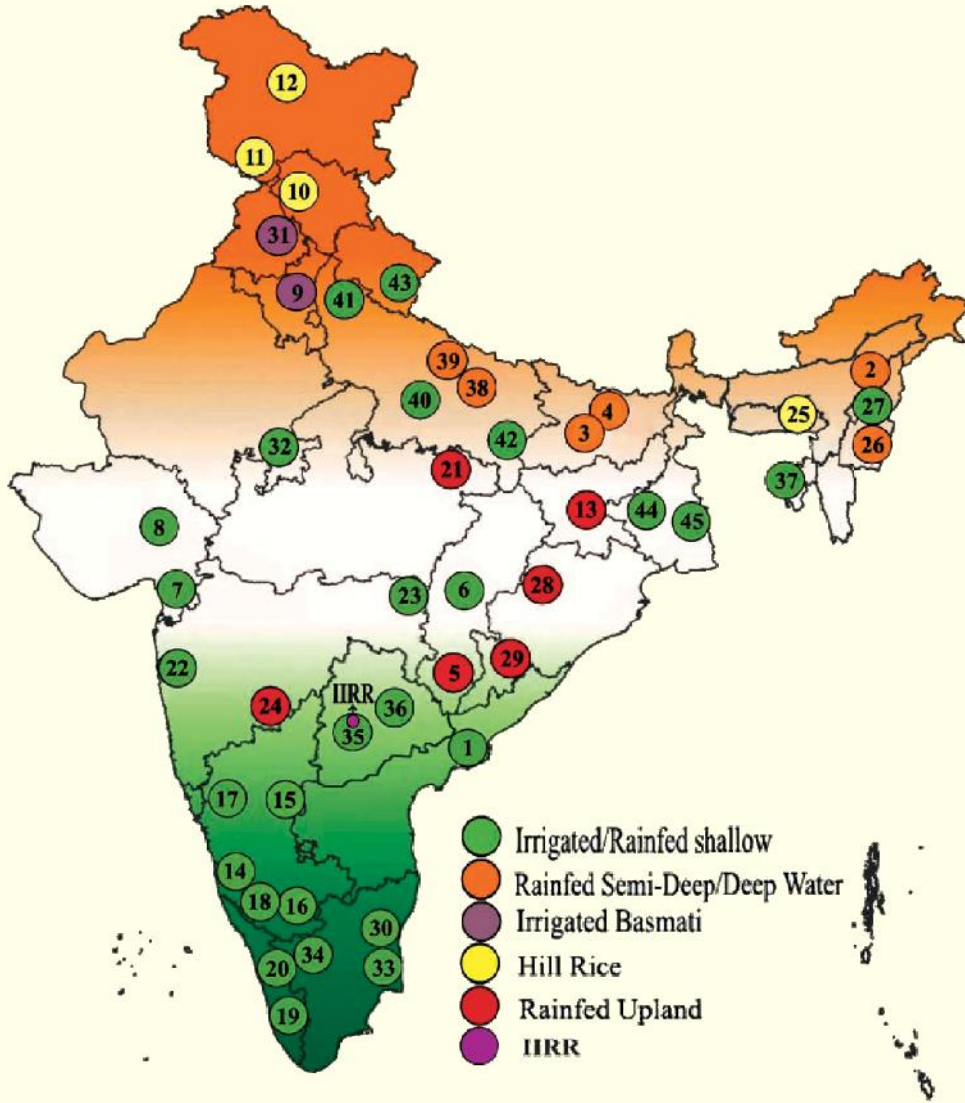
S. No	CVRC/ SVRC	States	IET No.	Variety / Hybrid Name	Ecosy stem	Grain Type	Grain Yield	Year of Not.	Notifi.No	Notifi. Date
31	SVRC	OD	23449	CR Dhan 210	AERO B	LS	3163	2020	3482 (E)	10-07-2020
32	SVRC	OD	24471	CR Dhan 410	RSL	LS	4354	2020	3482 (E)	10-07-2020
33	SVRC	GU	27876	GR 17	IRE	LB	5500	2020	3482 (E)	10-07-2020
34	SVRC	UP	21247	IR 64 Sub 1	SUB	LS	3278	2020	3482 (E)	10-07-2020
35	SVRC	TS	25310	Jagtiala Rice 1	IRME	LB	6990	2020	3482 (E)	10-07-2020
36	SVRC	TS	27405	Kunaram Rice 1	IRM	SS	6536	2020	3482 (E)	10-07-2020
37	SVRC	AP	27151	Maruteru Mahsuri	IRL	MS	6432	2020	3482 (E)	10-07-2020
38	SVRC	AP	26225	Maruteru Samba	IRM	MS	6559	2020	3482 (E)	10-07-2020
39	SVRC	AP	25305	Maruteru Sujatha	IRM	MS	7167	2020	3482 (E)	10-07-2020
40	SVRC	AP	26226	Nellore Dhanyarasi	IRM	MS	7042	2020	3482 (E)	10-07-2020
41	SVRC	AP	25273	Nellore Siri	IRL	MS	7322	2020	3482 (E)	10-07-2020
42	SVRC	AP	23194	Nellore Sugandha	ASG	MS	6318	2020	3482 (E)	10-07-2020
43	SVRC	AS	25337	Numali	IRM	LS	5451	2020	3482 (E)	10-07-2020
44	SVRC	CH	25470	Protezin	IRM	LS	4500	2020	3482 (E)	10-07-2020
45	SVRC	BI	23423	Rajendra Saraswati	IRE	LS	5084	2020	3482 (E)	10-07-2020
46	SVRC	AP	23081	Sasya	IRL	LB	5261	2020	3482 (E)	10-07-2020
47	SVRC	WB	21261	Sukumar	IRME	LS	3998	2020	3482 (E)	10-07-2020
48	SVRC	AP	25486	Teja	IRL	MS	6293	2020	3482 (E)	10-07-2020
49	SVRC	MH	27100	TrombayKarjat Kolam	IRM	SS	4239	2020	3482 (E)	10-07-2020
50	SVRC	TS	25284	Warangal Rice 1	IRL	LB	7500	2020	3482 (E)	10-07-2020
51	SVRC	GU	26646	GR 16 (Tapi)	RUP	LB	3603	2021	500 (E)	29/01/2021
52	SVRC	CH	24690	CG Barani Dhan 2	RSL	MS	3469	2021	500 (E)	29/01/2021
53	SVRC	UP	19117	NDR 9930111	RSL	SB	4250	2021	500 (E)	29/01/2021
54	SVRC	AP	20552	NLR 3041	IRL	MS	5168	2021	500 (E)	29/01/2021
55	SVRC	AP	22764	NLR 40024	IRE	MS	4799	2021	500 (E)	29/01/2021
56	SVRC	CH	27027	RTR 31	ASG	SS	4458	2021	500 (E)	29/01/2021
57	SVRC	BI	25960	SabourSampanna Dhan	RSL	SB	6830	2021	500 (E)	29/01/2021
58	SVRC	BI	24306	Swarna Samriddhi Dhan	IRL	LS	5729	2021	500 (E)	29/01/2021
59	SVRC	CH	27773	VIKRAM-TCR	IRME	LS	5414	2021	500 (E)	29/01/2021
60	SVRC	UT	26598	VL DHAN 159	HRUR	SB	2054	2021	500 (E)	29/01/2021
61	SVRC	SK	26596	VL Sikkim Dhan 4	HRIR	SB	4855	2021	500 (E)	29/01/2021

## Entries for Agronomic Evaluation Kharif 2021

SNo.	IET No.	Designation	Cross combination	GT	Trial name 2020 (Breeding)	Trial name in 2021 (Agronomy)
1.	26790	MTU 1273	MTU 1010 / FL478 // *3 MTU 1010	LS	AVT 1-E TP	AVT 2-E TP
2.	28329	RCPR 60-IR 97073-26-1-1-3	IR10L146 / IR10L137	LS	AVT 1-E TP	AVT 2-E TP
3.	28354	CR 4073-1339-3-5-1-1-3	IET 22296 / RR 2-6	LS	AVT 1-E TP	AVT 2-E TP
4.	28343	KNM 6965	MTU 1010 / KNM 118	LS	AVT 1-E TP	AVT 2-E TP
5.	28358	RP 5599-212-56-3-1	MTU 1010 / KMR 3	LS	AVT 1-E TP	AVT 2-E TP
6.	28111	<b>LP-19201 (Hybrid)</b>	-	LS	AVT 1-E TP	AVT 2-E TP
7.	28332	KNM 7048	KPS 3219 / KNM 118	LS	AVT 1-E TP	AVT 2-E TP
8.	28356	KNM 7037	KNM 606 / KNM 118	LS	AVT 1-E TP	AVT 2-E TP
9.	28115	<b>US-317 (Hybrid)</b>	-	MS	AVT 1-E TP	AVT 2-E TP
10.	28366	MTU 1312 (MTUAST 2-5-29-5)	(MTU 1010/MTU 1081) // *2 MTU 1010	LS	AVT 1-E TP	AVT 2-E TP
11.	26898	HURS 17-7-IR95786-9-2-1-2	IR 10 L-149 / IR 10 L 152	LS	AVT 2-E TP	AVT 2-E TP
12.	28396	ShuatsDhan 6	IRODA 117 / IR 72891-29-3-3-3 / IR 73012-137-2-2-2 (70)	LS	AVT 1-IME	AVT 2-IME
13.	27900	MTU 1276 (MTU 2578-56-1)	MTU 1156 / MT U 1081	MS	AVT 1-IM	AVT 2-IM
14.	28171	<b>RNE-0122 (Hybrid)</b>	-	MS	AVT 1-IM	AVT 2-IM
15.	28160	<b>HRI-202 (Hybrid)</b>	-	MS	AVT 1-IM	AVT 2-IM
16.	27686	MTU 1310 (MTU 2613-25-1-4)	MTU 1075 / CR 3598-1-4-2-1	MS	AVT 2-IM	AVT 2-IM
17.	28497	OR 2491-9	Vandana / Indravati	SB	AVT 1-L	AVT 2-L
18.	28501	RP 5970-2-6-19-16-24-12	Improved Samba Mahsuri*2 / Swarna	MS	AVT 1-L	AVT 2-L
19.	28508	CR 2830-48-1	Swarna / ARC10075	SB	AVT 1-L	AVT 2-L
20.	28509	MTU 1317 (MTU 2404-25-2)	MTU 1064 / MTU 1075	MS	AVT 1-L	AVT 2-L
21.	28538	OR 2436-10	Indravati / Namsagui 19	MB	AVT 1-L	AVT 2-L
22.	28544	CR 3969-17-2-2-1-1-1-1	IR 73907-753-2-3 / Pratiksya	MS	AVT 1-L	AVT 2-L
23.	27847	<b>IIRRH-115 (Hybrid)</b>	-	MS	AVT 1-CSTVT	AVT 2-CSTVT
24.	27851	CR 3903-161-1-3-2	Santepheap / IR82810-407 // IR 71700-247-1-1-2	MS	AVT 1-CSTVT	AVT 2-CSTVT
25.	27051	CR 2851-S-1-B-4-1-4-1-1	Gayatri / SR 26B	MS	AVT 1-CSTVT	AVT 2-CSTVT
26.	28606	CSRM1-7	IR 71730-51-2 / NSIC RC 106	LS	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
27.	28608	CSR 449S-13	CSR30 / CSR36	LS	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
28.	27077 (R)	RNR 11718	MTU 1010 / NLR 34449	MS	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
29.	27823	CSR MAGIC 157	Fedearroz 50 / SHZ-2 // PSBRc 82 / PSBRc 158 /// IR 77298-14-1-2-10 / IR 4630-22-2-5-1-3 // IR 45427-2B-2-2B-1-1 / Samba Mahsuri+ Sub 1	SB	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
30.	27807	KR 15066 (224-4-3-1-1)	ADT 45 / FL478	LB	AVT 1-AL&ISTVT	AVT 2-AL&ISTVT
31.	27937	<b>IIRRH 124 (Hybrid)</b>	-	LB	AVT 1-AEROB	AVT 2-AEROB

SNo.	IET No.	Designation	Cross combination	GT	Trial name 2020 (Breeding)	Trial name in 2021 (Agronomy)
32.	28631	RCPR 63-IR 97034-21-2-1-3	IR09L337 / IR09L154	LS	AVT 1-AEROB	AVT 2-AEROB
33.	28645	<b>YRH 2027 (Hybrid)</b>	NPS 2030 A / NPS 4069	LB	AVT 1-AEROB	AVT 2-AEROB
34.	27951	HURS 18-2-IR98976-20-1-2-2	IR11L152 / Sabitri	LB	AVT 1-AEROB	AVT 2-AEROB
35.	28636	RP 6361-RAF-252 -GSR-IR1-DQ146-L18-Y1	GSR IR1-8-S6-S3-Y2 / GSR IR 1-9-S9-Y3-SU1	LS	AVT 1-AEROB	AVT 2-AEROB
36.	28714	NVSR 6158	Jaya / IR 71829-3R-82-1-1	LB	AVT 1-BIOFORT	AVT 2-BIOFORT
37.	27984	HURS 17-6-IR 82475-110-2-2-1-2	IR 68144-2B-2-2-3-1-120 / IR64	LS	AVT 1-BIOFORT	AVT 2-BIOFORT
38.	28757	MTU 1321 (MTU 2284-103-1-7)	MTU 5249 / IR 72	MS	AVT 1-MS	AVT 2-MS
39.	28746	RNR 28362	Bhadrakali / NSN 20894	MS	AVT 1-MS	AVT 2-MS
40.	28754	MTU 1326 (MTU 2513-24-2-2)	BPT 5204 / NLR 34449	MS	AVT 1-MS	AVT 2-MS
41.	27438	MTU 1281 (MTU 2385-187-1-1-1)	MTU 1075 / MTU 1081 / MTU 1121	MS	AVT 1-MS	AVT 2-MS
42.	28730	KPS-6262	BPT 5204 / MTU 1010	MS	AVT 1-MS	AVT 2-MS
43.	27641	RP Bio 4919-B-B-NSR 86	KMR 3 / O. rufipogon	SB	AVT 1-LPT	AVT 2-LPT
44.	28818	RP 6317-S35-BC2F4-49-25-6-21	MTU 1121*2 / Swarna	LS	AVT 1-LPT	AVT 2-LPT
45.	28816	MTU 1329 (MTU 2513-24-2-2-1)	BPT 5204 / NLR 34449	LS	AVT 1-LPT	AVT 2-LPT
46.	28084	CR 3549-6-1-1-3-1-1	ADT 43 / Annapurna	MB	AVT 1-LNT	AVT 2-LNT
47.	28200	TRC BN-1311-B-B-43-11-1	Bhalum 3 / Naveen	LS	AVT 1-E (H)	AVT 2-E (H)
48.	28206	HPR 3106	HPR 2336 /AC 19146 //HPR 2143	LS	AVT 1-E (H)	AVT 2-E (H)
49.	28196	TRC KS - 1512-B-B-1-12-1	Kataktara / Swarna	MB	AVT 1-E (H)	AVT 2-E (H)
50.	26594 (R)	HPR 2929	Kalizini / HPR 2143 // HPT 2143	LS	AVT 1-M (H)	AVT 2-M (H)
51.	28230	TRC PSM -1720-B-B- 5-1	Pyzum / BPT 5204	LS	AVT 1-U (H)	AVT 2-U (H)
52.	28010 (R)	MTU 1293	MTU 1010 / FL 478 // *3 MTU 1010	LS	AVT 1-NIL	AVT 2-NIL
53.	28008 (R)	MTU 1291	MTU 1010 / FL 478 // *3 MTU 1010	LS	AVT 1-NIL	AVT 2-NIL
54.	28032 (R)	CRR 751-1-7-B-B	IR 64 Sub1*4 / I R 88287-367-B-B	LS	AVT 1-NIL	AVT 2-NIL
55.	28033 (R)	CRR 751-1-12-B-B	IR 64 Sub1*4 / IR 88287-367-B-B	LS	AVT 1-NIL	AVT 2-NIL
56.	28791 (R)	KR 16024	ADT 46 *3/Swarna sub-1	LS	AVT 1-NIL	AVT 2-NIL
57.	28789 (R)	KR 16022	ADT 46 *3 / Swarna sub-1	LS	AVT 1-NIL	AVT 2-NIL
58.	29209	RP 6472-RMS 20-35-15-4	Samba Mahsuri * 2 / MTS-Xa21 +Pi54	MS	AVT 1-NIL	AVT 2-NIL

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**भाकृअनुप - भारतीय चावल अनुसंधान संस्थान**  
**भारतीय कृषि अनुसंधान परिषद**

**ICAR - Indian Institute of Rice Research**

Indian Council of Agricultural Research

Rajendranagar, Hyderabad - 500 030

