

Hybrid Rice

In our country, an excellent progress has been made in hybrid rice research and development. As a result of concerted efforts over the last three decades, 117 hybrids have been released for commercial cultivation in different rice growing states across the country. Among these, 37 hybrids have been developed by the public sector, while remaining 80 are developed by the private sector. During the year, 2019, hybrid rice was planted in an area of 3 m.ha and more than 80% of the total hybrid rice area is in the states of Uttar Pradesh, Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha and Haryana. It's a matter of concern to note that area under hybrid rice remains @ 3 m.ha since 2016 and it may be due to unfavourable monsoons at the beginning of crop season (every year) besides factors like inadequate yield heterosis etc., Research efforts are intensified to address these challenges with the active involvement of public as well as private sector organizations. During this year (2019-20), 12 hybrids viz., CNRH-103, GRH-2, LG 93.01, MP 3030, US 380, US 303, SAVA 134, MRP 5222, RH 9000 Plus, MRP 5626, MRP 5433 and PAC 8744+ were released and notified by the CSCCSN&RV for commercial cultivation in different parts of the country. Among these, CNRH-103, GRH-2, LG 93.01 were state releases and remaining were central releases.

For identification of high yielding and widely adapted hybrids, a national level three tier system of evaluation is being adapted and in this, the hybrids developed by research network centres, including some of the voluntary centres and those developed by private sector seed companies having their own R&D are pooled together based on maturity groups into early (<120 days), mid early (121-130) and medium (131-140) trials. In addition, one more trial is also constituted aiming to develop medium slender grain type hybrids. IHRTs are conducted at 30-35 locations and these trials consist of test hybrids, national varietal / hybrid checks, zonal and local varietal checks in the respective maturity and grain type groups.

The hybrids are promoted to the next stage of testing i.e., Advance Varietal Trial (AVT-1) based on criterion mentioned in the Proceedings of 51 ARGM (pp 59-60). Based on similar criteria, the hybrids are promoted from AVT-1 to AVT-2 stages. Simultaneously all hybrid entries are tested for resistance to diseases and insect pest and grain quality traits during all the three years. The quality data of IHRT's was not considered for promotion this year, in tune with the promotion criteria adapted for IVT trials. Those hybrids performing consistently well during all the three years are proposed to Varietal Identification Committee (VIC) for consideration.

As per the 52nd ARGM (p 45 of Draft Proceedings), the criteria for inclusion of data of a location for analysis "minimum experimental mean yield of 4 t/ha for inbreds and 5 t/ha for hybrid trial and CV% for trial acceptance to be ranged between 5 and 20% under irrigated system" was suitably modified this year to include the yield data upto 4 t/ha in IHRTs as many locations were getting dropped, if 5 t/ha limit is applied.

During Kharif 2019, four hybrid trials were conducted and evaluated and test locations are given in Table 1 and Table 2 respectively.

Table 1: Details of Initial Hybrid Rice Trials conducted during Kharif 2019

S. No	Name of the trial	No. of hybrids evaluated		No. of test locations
		Public	Private	
1.	Initial Hybrid Rice Trial - Early	4	11	38
2.	Initial Hybrid Rice Trial - Mid Early	9	18	38
3.	Initial Hybrid Rice Trial - Medium	6	18	38
4.	Initial Hybrid Rice Trial - Medium Slender	6	5	35

Table 2: Zone wise test centres for Initial Hybrid Rice Trials, Kharif 2019

Zone	No. of Locations	Name of Locations
Zone I (Hills)	1	Public Sector: Malan (MLN)
Zone II (Northern)	5	Public Sector: Chatha (CHT), IARI (IAR), Kaul (KUL), Ludhiana (LDN), Pantnagar (PNT)
Zone III (Eastern)	15	Public Sector: Allahabad (ALH), Chinsurah (CHN), Chiplima (CHP), Cuttack (NRR), Masodha (MSD), Nagina (NGN), Pusa (PSA), Ranchi (RCI), Sabour (SBR), Varanasi (VRN) Private Sector: JK Agri genetics(JKA), Nuziveedu Seeds (NZV), Pioneer Seeds (PHI) Syngenta (SYN), Trimurthi Seeds (TMT)
Zone IV (North Eastern)	2	Public Sector: Titabar (TTB), Arundhatinagar (ARD)
Zone V (Central)	6	Public Sector: Jabalpur (JBP), Raipur (RPR), Sakoli (SKL), Sindewahi (SND), Waraseoni (WRS) Private Sector: Advanta Seeds (ADV), VNR Seeds (VNR)
Zone VI (Western)	9	Public Sector: Dabhoi (DBI), Karjat (KJT), Navsari (NVS), Nawagam (NWG), Pondaghat (PDG), Radhanagari (RDN), Shirgaon (SHG), Vadgaon (VDG) Private Sector: Ankur Seeds (ANK)
Zone VII (Southern)	14	Public Sector: Aduthurai (ADT), Bapatla (BPT), Brahmavar (BRM), Coimbatore (CBT), Hyderabad (IIRR), Karaikal (KRK), Malagi (MLG), Mandya (MND), Mugad (MGD), Maruteru (MTU), Sirsi (SRS) Warangal (WGL) Private Sector: Bayer Seeds (BAY), Tierra Seeds (Tierra)

1. Initial Hybrid Rice Trial - Early (IHRT-E)

Fifteen test hybrids (11 and 4 from private and public sector respectively) were evaluated in 38 locations comprising Zone I, II, III, IV, V, VI and VII along with national hybrid check (US 314), national varietal check (CO 51), zonal varietal checks (PR 124 - Zone II; NDR 97 - Zone III; Luit- Zone IV; Sahbhagidhan- Zone V & VI; MTU 1153 - Zone VII) and local varietal checks of their respective locations. The details about the composition of the trial are given in Table 3.

Table 3: Composition of Initial Hybrid Rice Trial - Early (IHRT-E), Kharif 2019

S. No	IET No	Name	Nominating Agency
1	28111	LP-19201	Longping (I) Seeds, Hyderabad
2	28112	RRX-566	Rasi Seeds, Hyderabad
3	28113	LP-18204	Longping (I) Seeds, Hyderabad
4	28114	RRX-719	Rasi Seeds, Hyderabad
5	28115	US-317	Seed Works, Hyderabad
6	28116	WGRH-18	RARS, Warangal
7	28117	NPH-X4	Nuziveedu Seeds, Hyderabad
8	28118	MR-8222	Meta helix, Hyderabad
9	28119	HRI-201	Bayer Bioscience, Hyderabad
10	28120	RH-169035	UPL, Hyderabad
11	28121	ARRH-23664	Ankur Seeds, Nagpur
12	28122	RH-169269	UPL, Hyderabad
13	28123	IIRRH-130	ICAR-IIRR, Hyderabad
14	28124	CRHR-105	ICAR-NRRI, Cuttack
15	28125	CRHR-106	ICAR-NRRI, Cuttack
16	-	US-314 (NCH)	National Check Hybrid
17	-	CO-51 (NCV)	National Check Variety
18	-	PR-124/Luit/NDR-97/ Sahbhagidhan/MTU-1153 (RCV)	Regional Check Variety
19	-	Local Check Variety (LCV)	Local Check Variety

Northern: PR-124; North Eastern: Luit; Eastern: NDR-97; Central and Western: Sahbhagidhan; Southern: MTU-1153

The detailed location wise and zone wise performance for grain yield and days to 50% flowering (DFF) are given in Appendix 1 & 2 respectively. The grain quality traits are given in Appendix 3. The overall DFF ranged from 86 to 97 days. The national varietal check (CO 51) had overall mean of 86 days, zonal checks of 96 days, local checks of 90 days and national hybrid check (US 314) of 90 days.

As per the quality data of IHRT-E hybrids (Appendix 3), the milling percentage ranged from 66.5 to 71.8 and HRR from 35.5 to 67.9. Majority of the hybrids showed intermediate amylose content. Regarding grain type the entries were falling in different grain type categories.

Based on overall mean, three hybrids LP 19201, LP 18204, RH 169269 significantly out yielded the best varietal and hybrid check (Table 4). Besides these, based on zonal means, eight hybrids viz., US 317 (Zone III & IV), CRHR 105 (Zone II), RRX 719, WGRH 18, HRI 201, RH 169035, IIRRH 130 (III) and MR 8222 (V) were found promising.

Table 4: Promising hybrids identified in IHRT-E, Kharif 2019

S. No	Hybrid	IET No	DFD	Grain Type	Mean Yield (kg/ha)							Remarks
					Overall	Zone II	Zone III	Zone IV	Zone V	Zone VI	Zone VII	
1	LP 19201	28111	95	-	7223 [18] (33)	7717 [11] (28)	7135 [17] (34)	5132 (27)	7563 [17] (22)	6646 [16] (37)	7671 [31] (28)	Promoted to AVT-1-E-TP
2	LP 18204	28113	92	LS	6705 [10] (24)	6966 (16)	6942 [14] (30)	5334 [6] (32)	6981 [8] (12)	6615 [15] (36)	6442 [10]	Promoted to AVT-1-E-TP
3	RH 169269	28122	90	LB	6567 [8] (21)	6988 (16)	6861 [13] (29)	5243 (30)	7200 [11] (16)	5646 (16)	6459 [10]	Promoted to AVT-1-E-TP
4	US 317	28115	89	MS	6342 (17)	6602 (10)	6830 [12] (28)	5325 [6] (32)	6219	5115	6438 [10]	Promoted to AVT-1-E-TP
5	CRHR 105	28124	91	-	5419	7689 [11] (28)	5808	4864 (21)	4937	4678	5086	Promoted to AVT-1-E-TP
6	RRX 719	28114	89	LS	6003 (11)	5532	6570 [8] (23)	5214 (29)	6288	5282	6225 [6]	Promoted to AVT-1-E-TP
7	WGRH-18	28116	97	LS	6113 (13)	5734	6454 [6] (21)	4655 (15)	6775	5490 (13)	6422 [9]	Dropped high DFD
8	HRI 201	28119	93	LS	6257 (16)	6620 (10)	6480 [6] (22)	5221 (29)	6789 [5]	5768 (19)	6178 [5]	Promoted to AVT-1-E-TP
9	RH 169035	28120	93	LS	6099 (13)	6494	6543 [7] (23)	4875 (21)	6472	5805 (19)	5767	Promoted to AVT-1-E-TP
10	IIRRH 130	28123	94	LS	5927	6225	6453 [6] (21)	4748 (18)	6742	4781	5728	Promoted to AVT-1-E-TP
11	MR 8222	28118	93	SB	6342 (17)	7100 (18)	6192 (16)	5176 (28)	7031 [9] (13)	5215	6582 [12] (10)	Promoted to AVT-1-E-TP
12	US 314	NCH	90	MS	6108	6949	6099	5040	6460	5746	5875	
13	CO-51	NCV	86	MS	4882	5180	5307	3748	4573	4446	5225	
14	PR-124/Luit/ NDR-97/ Sahbhagidhan/ MTU-1153	ZCV	95	LB	5350	6024	4019	3973	6211	4861	6003	
15		LCV	90	-	5420	5698	5331	4032	5321	4774	5941	

() -Yield superiority in percent over the best varietal check; [] - Yield superiority in percent over the Hybrid check

For promotion of entries (based on 90 day DFD limit), check mean of 90±5 days criterion was adopted. As per this criteria, all the above identified promising hybrids viz., LP 19201, LP 18204, RH 169269, US 317, CRHR 105, RRX 719, HRI 201, RH 169035, IIRRH 130

and MR 8222 are promoted to AVT-1-E-TP. The hybrid WGRH-18 (97 days) having exceeded the DFF criterion is dropped from further evaluation.

2. Initial Hybrid Rice Trial - Mid Early (IHRT-ME)

Mid early trial comprising 27 hybrids and four checks *viz.*, Gontra Bidhan-3 (national varietal check); US 312 (national hybrid check); zonal checks *viz.*, PR 113 (Zone II); Lalat (Zone III); Karjat 7 (V & VI); MTU 1010 (Zone VII) and respective local checks were conducted at 38 locations. Among 27 hybrids evaluated, 18 were from private sector and nine from public sector. The composition of the trial is given in Table 5.

Table 5: Composition of Initial Hybrid Rice Trial - Mid Early (IHRT-ME), Kharif 2019

S. No	IET No	Name	Nominating Agency
1	28126	NPH-101	Nirmal Seeds, Jalgaon
2	28127	IRH-121	IGKV, Raipur
3	28128	SHX-468	Savannah Seeds, Hyderabad
4	28129	SAVA-5055	Savannah Seeds, Hyderabad
5	28130	Indam-300-007	Indo-American, Hyderabad
6	28131	SAVA-5065	Savannah Seeds, Hyderabad
7	28132	LP-19301	Longping (I) Seeds, Hyderabad
8	28133	MEPH-152	MAHYCO, Hyderabad
9	28134	RRX-533	Rasi Seeds, Hyderabad
10	28135	US-326	Seed Works, Hyderabad
11	28136	PHI-19107	Pioneer Seeds, Hyderabad
12	28137	RRX-633	Rasi Seeds, Hyderabad
13	28138	US-339	Seed Works, Hyderabad
14	28139	PHI-19108	Pioneer Seeds, Hyderabad
15	28140	JKRH-2789	JK Seeds, Hyderabad
16	28141	RNC-0158	Syngenta, Hyderabad
17	28142	MP-3020	Mahindra Agri Business, Mumbai
18	28143	NK-5251++	Syngenta, Hyderabad
19	28144	IIRRH-131	ICAR-IIRR, Hyderabad
20	28145	RNC-0050	Syngenta, Hyderabad
21	28146	JRH-119	JNKVV, Jabalpur
22	28147	IIRRH-132	ICAR-IIRR, Hyderabad
23	28148	MTUHR-2104	RARS, Maruteru
24	28149	IIRRH-133	ICAR-IIRR, Hyderabad
25	28150	IRH-120	IGKVV, Raipur
26	28151	IIRRH-136	ICAR-IIRR, Hyderabad
27	28152	IRH-122	IGKVV, Raipur
28	-	US-312 (NCH)	National Check Hybrid
29	-	Gontra Bidhan-3 (NCV)	National Check Variety
30	-	PR-113/Lalat/ Karjat-7/ MTU-1010 (RCV)	Regional Check Variety
31	-	Local Check Variety (LCV)	Local Check Variety

North Zone: PR 113; East Zone: Lalat; West Zone: Karjat-7; South Zone: MTU-1010

Performance of the hybrids with respect to grain yield and days to 50% flowering (DFF) are given in Appendix 4 & 5 respectively. Grain quality traits are given in Appendix 6.

Performance of promising hybrids identified in different zones is given in Table 6. In the trial, mean DFF of checks ranged from 96-100 days, the hybrid check US 312 had mean DFF

of 97 days. The varietal checks *viz.*, national, zonal and local checks had mean DFF of 97, 96 and 100 days respectively.

Table 6: Promising hybrids identified in IHRT-ME, Kharif 2019

S. No	Hybrid	IET No	DFF	Grain Type	Mean Yield (kg/ha)							Remarks
					Overall	Zone II	Zone III	Zone IV	Zone V	Zone VI	Zone VII	
1	PHI 19107	28136	97	LS	7077 [11] (10)	7385 [19] (11)	6273	5296	7891 [28] (21)	5722 [12] (8)	8076 [15] (14)	Promoted to AVT-1-ME-TP
2	NK 5251++	28143	99	-	6643	6680 [8]	5749	6119	6281	5508 [8]	8483 [21] (20)	Promoted to AVT-1-ME-TP
3	PHI 19108	28139	102	LB	6996 [9]	6788 [10]	6923 [7] (12)	6353 [10]	6271	6032 [18] (14)	8232 [17] (16)	Promoted to AVT-1-ME-TP
4	NPH 101	28126	100	LB	6348	6349	6280	4649	7153 [7] (10)	5981 [17] (13)	6406	Promoted to AVT-1-ME-TP
5	SHX 468	28128	96	LB	6708 [5]	7676 [24] (15)	6185	5781	7038 [14]	5297	7248	Promoted to AVT-1-ME-TP
6	SAVA-5055	28129	94	LB	6760 [6]	7201 [16]	6185	5791	6977 [13]	5786 [13] (10)	7532 [7]	Promoted to AVT-1-ME-TP
7	LP 19301	28132	95	LB	6863 [7]	7273 [18]	6793 [5] (10)	5305	6993 [13]	5799 [14] (10)	7431 [6]	Promoted to AVT-1-ME-TP
8	MEPH-152	28133	99	MS	6755 [5]	6888 [11]	6240	5324	7260 [17] (12)	6026 [18] (14)	7443 [6]	Promoted to AVT-1-ME-TP
9	US 339	28138	99	LB	6529	6173	6360	5482	6132	5955 [17] (13)	7629 [9]	Promoted to AVT-1-ME-TP
10	RNC-0050	28145	101	LB	6827 [7]	6705 [8]	6349	6221 [7]	7029 [14]	5957 [17] (13)	7707 [10]	Promoted to AVT-1-ME-TP
11	US 312	NCH	97	MS	6404	6186	6456	5779	6672	5102	7018	
12	Gontra Bidhan-3	NCV	97	SB	6437	6667	6198	5984	6508	5288	7086	
13	Lalat/Karjat7/MTU-1010	RCV	96	LS	5689	6319	6136	5293	5938	4666	5496	
14		LCV	100	-	5968	5847	5360	4683	6373	5061	6963	

() -Yield superiority in percent over the best varietal check; [] - Yield superiority in percent over the Hybrid check

Based on the overall mean, one hybrid *viz.*, PHI 19107 was found promising and based on zonal means, 9 hybrids *viz.*, NK 5251++ (VII); PHI 19108 (III, VI & VII); NPH 101, MEPH 152 (V & VI); SHX 468 (II); LP 19301 (III & VI); SAVA 5055, US 339, RNC-0050 (VI) were found to be superior to both varietal and hybrid checks.

For promotion of entries (based on 100 day DFF limit), check mean of 97±5 days criterion was adopted. As per this criteria, all the above promising hybrids (meeting the required DFF limit) *viz.*, PHI 19107 (overall), NK 5251++ (VII), PHI 19108 (III, VI, VII), NPH 101,

MEPH 152 (V & VI), SHX 468 (II), LP 19301 (III & VI), SAVA 5055, US 339, RNC-0050 (VI) are promoted to AVT-1-ME-TP.

As per the quality data of IHRT-ME hybrids (Appendix 6), the milling percentage ranged from 68.1 to 72.5 and HRR from 40.5 to 69.7. Almost all the hybrids in the trial showed intermediate amylose content however differed in grain type categories.

3. Initial Hybrid Rice Trial - Medium (IHRT-M)

The IHRT-M, conducted at 38 locations with 24 hybrids along with four checks *viz.*, HRI-174 (national hybrid check); NDR-359 (national varietal check); zonal varietal checks (PR 121 - North; CR Dhan 300 - East & North East); IR 64 - Central; Akshayadhan- Western; Jaya - Southern) and local checks of their respective locations. Among the 24 test hybrids evaluated, 18 were from private sector and six from public sector. The details about the composition of the trial are given in Table 7.

Table 7: Composition of Initial Hybrid Rice Trial - Medium (IHRT-M), Kharif2019

S. No	IET No	Name	Nominating Agency
1	28153	TMRH-5559	Trimurti Seeds, Hyderabad
2	28154	MEPH-153	MAHYCO, Hyderabad
3	28155	RRX-426	Rasi Seeds, Hyderabad
4	28156	US-368	Seed Works, Hyderabad
5	28157	NPH-X29	Nuziveedu Seeds, Hyderabad
6	28158	RRX-445	Rasi Seeds, Hyderabad
7	28159	PHI-19103	Pioneer, Hyderabad
8	28160	HRI-202	Bayer Bioscience, Hyderabad
9	28161	RH-169292	UPL, Hyderabad
10	28162	PHI-19104	Pioneer Overseas, Hyderabad
11	28163	PHI-19105	Pioneer Overseas, Hyderabad
12	28164	RH-169257	UPL, Hyderabad
13	28165	IIRRH-134	ICAR-IIRR, Hyderabad
14	28166	PHI-19106	Pioneer Overseas, Hyderabad
15	28167	MP-3310	Mahindra Agri Business, Mumbai
16	28168	IIRRH-135	ICAR-IIRR, Hyderabad
17	28169	CP-800	CP Seeds, Andhra Pradesh
18	28170	CRHR-122	ICAR-NRRI, Cuttack
19	28171	RNE-0122	Syngenta, Hyderabad
20	28172	IIRRH-137	ICAR-IIRR, Hyderabad
21	28173	CRHR-148	ICAR-NRRI, Cuttack
22	28174	RNE-0148	Syngenta, Hyderabad
23	28175	DLRH-6	Delta Agrigenetics, Hyderabad
24	28176	IIRRH-138	ICAR-IIRR, Hyderabad
25	-	HRI-174 (NCH)	National Check Hybrid
26	-	NDR-359 (NCV)	National Check Variety
27	-	PR-121/CR Dhan-300/ IR-64/ Akshayadhan/Jaya (RCV)	Regional Check Variety

S. No	IET No	Name	Nominating Agency
28	-	Local Check Variety (LCV)	Local Check Variety

Northern: PR-121; Eastern and North Eastern: CR Dhan-300; Central: IR-64; Western: Akshayadhan and Southern: Jaya

The location wise data on DFF and grain yield are given in Appendix 7 & 8 respectively and grain quality traits are given in Appendix 9.

The list of promising hybrids with the yield advantage over the best checks in their respective zones is given in Table 8.

Table 8: Promising hybrids identified in IHRT-M, Kharif 2019

S. No	Hybrid	IET No	DFF	Grain Type	Mean Yield (kg/ha)							Remarks
					Overall	Zone II	Zone III	Zone IV	Zone V	Zone VI	Zone VII	
1	PHI 19104	28162	101	LB	7562 [6] (20)	7437 [8] (15)	7610 [7] (18)	6521	7173 (12)	6498 (14)	9082 [10] (29)	Promoted to AVT-1-M-TP
2	HRI-202	28160	102	LB	7482 (19)	7115 (10)	7456 [5] (15)	6809	7184 (12)	6619 (16)	8869 [7] (26)	Promoted to AVT-1-M-TP
3	RNE-0148	28174	100	-	7362 (17)	7690 [11] (19)	7278 (13)	6344	6702	7143 [10] (25)	8554 (21)	Promoted to AVT-1-M-TP
4	PHI-19106	28166	103	LB	7222 (15)	7170 (11)	7399 [5] (15)	6542	6585	6906 [6] (21)	7977 (13)	Promoted to AVT-1-M-TP
5	US-368	28156	103	SB	7151 (14)	7001	7172 (11)	6556	7056 (10)	6814 [5] (19)	7721	Promoted to AVT-1-M-TP
6	PHI-19103	28159	102	LB	7234 (15)	7128 (10)	7364 (14)	6565	6946	6792 [5] (19)	7892 (12)	Promoted to AVT-1-M-TP
7	PHI-19105	28163	101	LB	7185 (14)	7562 [9] (17)	7469 [5] (16)	6847	6128	6652 (16)	8037 (14)	Promoted to AVT-1-M-TP
8	RNE-0122	28171	101	MS	6957 (11)	7309 [6] (13)	7192 (11)	6050	6896	5608	8100 (15)	Promoted to AVT-1-M-TP
9	RRX-445	28158	102	MS	7265 (16)	7300 [6] (13)	7360 (14)	6091	7132 (11)	6765 (18)	7981 (13)	Promoted to AVT-1-M-TP
10	RH-169292	28161	100	LB	6933 (10)	7221 [5] (12)	6984	6416	7164 (12)	6126	7371	Promoted to AVT-1-M-TP
11	HRI 174	NCH	102	LB	7161	6908	7080	6727	6963	6498	8259	
12	NDR 359	NCV	100	LB	6285	5946	6462	6276	6425	5098	7052	
13	PR 113/ CR Dhan-300/ IR 64/ Akshayadhan/ Jaya	RCV	104	SB	6039	6257	5707	5554	5939	5713	6828	
14		LCV	103	-	6099	6468	5904	5517	6140	5500	6926	

() -Yield superiority in percent over the best varietal check; [] - Yield superiority in percent over the Hybrid check

Based on grain quality parameters (Appendix 9), milling percentage of the hybrids ranged from 67.0 to 71.6 and HRR from 35.0 to 64.9. All the test hybrids showed intermediate amylose content and different grain types.

Based on overall mean, one hybrid PHI-19104 and based on zonal means nine hybrids viz., HRI-202 (Zone III & VII); RNE-0148 (II & VI); PHI-19106 (III & VI); US 368, PHI-19103 (VI); PHI-19105 (II & III); RNE-0122, RRX-445, RH 169292 (II) were found to be promising with required yield advantage over the varietal and hybrid checks. All these 10 hybrids are promoted to AVT-1-M-TP trial.

4. Initial Hybrid Rice Trial - Medium Slender (IHRT-MS), Kharif 2019

The trial consisting of 11 hybrids, six from public sector and five from private sector was conducted at 35 locations. It has five checks viz., national hybrid checks (JKRH 3333 & 27P63); national varietal checks (WGL 14 & BPT 5204); zonal checks (Improved Samba Mahsuri - Eastern & Central; Karjat 6 - Western; Ketekejoha - NorthEast; ADT 49 - South). The details about the composition of the trial are given in Table 9.

Table 9: Composition of Initial Hybrid Rice Trial –Medium Slender (IHRT-MS), Kharif 2019

S. No	IET No	Name	Nominating Agency
1	28177	MEPH-155	MAHYCO, Hyderabad
2	28178	US-308	Seed Works, Hyderabad
3	28179	NPH-X28	Nuziveedu Seeds, Hyderabad
4	28180	PHI-19101	Pioneer Seeds, Hyderabad
5	28181	HRI-203	Bayer Bioscience, Hyderabad
6	28182	MTUHR-2105	RARS, Maruteru
7	28183	MTUHR-2107	RARS, Maruteru
8	28184	TNTRH-99	TNAU, Coimbatore
9	28185	CRHR-145	ICAR-NRRI, Cuttack
10	28186	TNRH-294	TNAU, Coimbatore
11	28187	CRHR-150	ICAR-NRRI, Cuttack
12	-	JKRH-3333 (NCH-1)	National Check Hybrid-1
13	-	27P63 (NCH-2)	National Check Hybrid-2
14	-	WGL-14 (NCV-1)	National Check Variety-1
15	-	BPT-5204 (NCV-2)	National Check Variety-2
16	-	Improved Samba Mahsuri/ Ketekejoha/Karjat-6/ADT-49 (RCV)	Regional Check Variety

Eastern and Central: Improved Samba Mahsuri; North East: Ketekejoha; Western: Karjat-6 and Southern: ADT-49

The location wise mean data of grain yield and DFF are given in Appendix 10 & 11 respectively. The grain quality traits are given in Appendix 12.

Based on overall mean, one hybrid PHI 19101 and on zonal mean basis five hybrids viz., MEPH 155, HRI 203 (Zone VI); CRHR 150, US 308 (V); and TNRH 99 (IV) were found

promising with recommended yield advantage over the varietal as well as hybrid checks (Table 10). All these hybrids are promoted to AVT-1-MS trial.

Based on the grain quality parameters (Appendix 12), the milling percentage of hybrids in the trial ranged from 68.5 to 71.8 and HRR from 53.6 to 67.9. All the hybrids have the required MS grain type with intermediate amylose content.

Table 10: Promising hybrids identified in IHRT-MS, Kharif 2019

S. No	Hybrid	IET No	DFD	Grain Type	Mean Yield (kg/ha)					Remarks	
					Overall	Zone III	Zone IV	Zone V	Zone VI		Zone VII
1	PHI 19101	28180	104	MS	6419 [6] (14)	6115	5261 [5] (11)	6560 [12] (12)	5605 (13)	7247 (24)	Promoted to AVT-1-MS
2	MEPH 155	28177	101	MS	6299 (12)	6246	5166	6399 [9]	6072 [9] (22)	6664 (14)	Promoted to AVT-1-MS
3	HRI 203	28181	101	MS	6012	6894	4865	5628	6172 [11] (24)	6095	Promoted to AVT-1-MS
4	CRHR 150	28187	105	MS	6011	6554	5194	6882 [18] (17)	5094	5756	Promoted to AVT-1-MS
5	US 308	28178	106	MS	6204 (10)	6803	5004	6708 [15] (14)	5580 (12)	6154	Promoted to AVT-1-MS
6	TNRH 99	28184	99	MS	5798	6622	5288 [6] (11)	5231	5287	6329	Promoted to AVT-1-MS
7	JKRH 3333	NCH 1	103	MS	6072	6631	4997	5817	5565	6602	Promoted to AVT-1-MS
8	27P63	NCH 2	104	MS	6046	6116	4805	5847	5241	6998	
9	WGL 14	NCV 1	108	MS	5528	6184	4710	5882	4492	5743	
10	BPT 5204	NCV 2	111	MS	5640	6650	4762	5690	4973	5854	
11	Improved Samba Mahsuri/ Ketekejoha/ Karjat-6/ ADT-49	ZCV	105	MS	4880	5180	4185	5417	4396	4716	

() -Yield superiority in percent over the best varietal check; [] - Yield superiority in percent over the best Hybrid check