

Short Communication

Screening of Early Rice Genotypes for Red and Lateritic Areas of West Bengal

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The aim of the present experiment was to screen promising early duration rice genotypes for red and lateritic areas of West Bengal. The experiment was conducted during *kharif* 2006, at the farm of Rice Research Station, Bankura, West Bengal, India. Among the sixty one promising rice genotypes fourteen showed significant difference in yield from the best check (Annada) of which six entries i.e. IET 20111, IET 20113, IET 20114, IET 20142 and IET 20147 exceeded flowering duration more than 90 days. So they were not considered as early rice genotypes. Rest eight rice genotypes whose 50% flowering were 90 days and less i.e. IET 20133, IET 20106, IET 20121, IET 20124, IET 20126, IET 20127, IET 20103 and IET 20128, screened as early rice genotypes suitable for red and lateritic areas of West Bengal.

Keywords : Rice, promising rice genotypes, early duration, red and lateritic areas, Bankura

We know that rice is a complicated crop. As it grows under widely divergent agro-ecological condition, so it requires specific genotypes for specific region and seasons. State, National and International level multi-locational trials gave the rice scientists an opportunity to screen the entries under natural condition (Mukherji 1978). By this process scientists identified different rice varieties for different geographical regions, e.g. Damodar, Dasal and Getu for salt affected parts of West Bengal (Sinha and Dutt, 1974; Sinha and Rai, 1976; Bhattacharyya, 1976), Vivek Dhan 82 for the Indian Himalaya (Sharma *et. al.*, 2003), Santosh for low land of Bihar (Thakur *et. al.*, 2003), Rajendra Mahsuri-1 for shallow lowland of Bihar (Sahai *et. al.*, 2004), Sahyadri for Western India (Ingale *et. al.*, 2004), Puspa for upland areas of West Bengal (Mallick *et. al.*, 2012, Mallick *et. al.*, 2013a, Mallick *et. al.*,

2013b), Dhiren for irrigated late areas of West Bengal (Mallick *et. al.*, 2013c). So, screening of suitable variety is one of the major steps that plays a very important role in increasing the yield. The recent investigation was under taken to screen early rice genotypes suitable for cultivation in upland of red and lateritic areas of West Bengal. Drought prone districts of Purulia, Bankura, Paschim Medinipur, parts of Birbhum and Burdwan are fall under red and lateritic areas of West Bengal.

Materials and Methods

The trial was constituted with 61 test entries of early rice and three checks (Annada, Narendra 97, and Provat). Annada, Narendra 97 and Provat used as national, regional and local check respectively. Rice Research Station, Bankura obtained the 61 test entries along with National check Annada and regional check Narendra 97 from

Directorate of Rice Research, Rajendranagar, Hyderabad-30, as a part of All India Co-ordinated trial IVT - E (Initial Variety Trial - Early). The experiment conducted at the Farm of Rice Research Station, Bankura following the design of simple lattice (8 x 8). Seeds of test entries along with checks sown in well prepared dry seed bed on 20.06.2006. 25 days old seedlings were transplanted on the well puddle field. Plot size was 10 m² and plant to plant 15 cm and row to row 20 cm distance was maintained and applied fertilizer does was N, P₂O₅, K₂O 60 kg ha⁻¹ : 30 kg ha⁻¹ : 30 kg ha⁻¹. Data on yield, 50% flowering and plant height were taken following standard procedures.

Results and Discussion

Among the check varieties Annada gave highest yield (3975 kg ha⁻¹) as compared to Provat (3615 kg ha⁻¹) and Narendra 97 (3523 kg ha⁻¹). So Annada is the best check variety in this trial. Among the 61 test entries 32 gave more yield (ranges from 0.17% to 66.46%) than best check variety Annada. But yield difference were significant in case of

only 14 entries namely IET 20103, IET 20106, IET 20111, IET 20113, IET 20114, IET 20115, IET 20121, IET 20124, IET 20126, IET 20127, IET 20128, IET 20133, IET 20142, IET 20147 and IET 20151 (Table I). Among them six entries 50% flowering exceeded 90 days namely IET 20111 (97 days), IET 20113 (97 days), IET 20114 (104 days), IET 20115 (106 days), IET 20142 (103 days) and IET 20147 (97 days). So they were not considered as early rice genotypes.

It is established that the chronologically drought affected areas of West Bengal, rice variety must be of early duration and should have drought tolerance for sustaining the periodical drought stress (De Dutta, 1975, Chang and Vergara, 1975; Pande, 1977). Considering the experience of previous works, during selection most emphasis was given on 50% flowering and grain yield. By following this process Mallick *et. al.* (2013 d) selected eight early and mid early rice genotypes from International upland Rice Observation Nursery during 2006.

Table I: Yield performance of the early rice genotypes during *kharif* 2006 in comparison with check varieties, at RRS, Bankura

Sl No	IET No.	Designation of the rice genotypes	50% flowering	Plant Height (cm)	Yield (kg ha ⁻¹)	% yield increase or decrease over best check
1	19257	UPRI 2001-16	85	90	2879	- 27.57
2	19260	KMP - 105	77	95	3553	- 11.87
3	19282	OR 1849-1	86	85	4105	+ 3.27
4	19263	OR 2069-10	78	105	2910	- 26.79
5	20098	AD 01236	100	85	3278	-17.53
6	20099	AD 02060	78	105	3982	+0.75
7	20100	NDR 97-12 (IR 76223-1-NDR-B-1-6)	80	85	4105	+3.27
8	20101	NDR 1018-1-1-2	92	135	3982	+0.17
9	20102	NDR 1028-1-3	92	125	2971	-25.25
10	20103	NDR 1053-12	82	135	4687 *s	+17.91
11	20104	CB-04-109	87	115	4399	+10.66
12	20105	CB-00-15-24	89	85	3186	-19.85
13	20106	RRU-2840	87	114	4840 *s	+21.70
14	20107	CB-02-586	89	86	3033	-23.69
15	20108	RR 427-1	82	94	4656	+17.13

16	20109	RR 168-1-1071	82	126	4289	+7.89
17	20110	IR 71525-19-1-1-CRRI	89	125	3982	+0.17
18	20111	RP 4664-2-IR 778384-12-35-3-11-6-B	97	125	5147 *	29.48
19	20112	HKR 03-30	88	106	3615	-9.05
20	20113	RP 4664-8-IR 77384-12-35-3-6-6-B	97	111	5269 *	+32.55
21	20114	KCPI	104	139	6617 *	+66.46
22	20115	NVSR 20	106	145	6556 *	+64.93
23	20116	UPRI 2004-6	82	107	4166	+4.80
24	20117	UPRI 2004-5	83	95	3921	1.37
25	20118	UPRI 2004-15	87	115	3247	-18.31
26	20119	RAU 1428-3-5-9-4-2	85	110	3370	-15.22
27	20120	RAU 1397-18-3-7-9-4-2	95	135	3921	-1.35
28	20121	BAU-GVT-437-06	81	135	4840 *s	+21.75
29	20122	BAU-GVT-424-05	82	130	4136	+4.05
30	20123	BAU-GVT-436-06	80	120	4399	+10.66
31	20124	BAU-GVT-436-06	88	125	4901 *s	+23.29
32	20125	R 1264-1670-1-1	87	90	3737	-5.98
33	20126	R 1457-53-2-1	86	110	4781 *s	+20.27
34	20127	R 1254-461-3-1	84	95	4779 *s	+20.22
35	20128	PAU 3040-3-10-2	85	121	4687 *s	+17.91
36	20129	RTNI	74	115	3069	-22.79
37	20130	CR 898-2-1	85	120	3540	-10.94
38	20131	CR 876-6-1	90	115	3921	-1.35
39	20132	CR 2340-2	69	114	4105	+3.27
40	20133	CR 2340-4	86	111	5208 *	+31.02
41	20134	CR 2340-1	90	100	2941	-26.01
42	20135	BAU 172-90	82	80	3094	-22.16
43	20136	OR 1774-4	100	95	3553	-10.62
44	20137	RP 4664-2-IR-77384-12-35-3-12-12-B	105	95	4411	+10.96
45	20138	RP 4664-7-IR -77384-12-35-3-12-5-B	104	120	4258	+7.12
46	20139	OR 2087-2	100	105	3921	-1.35
47	20140	MTU 1098	104	120	4534	+12.33
48	20141	JGL 11118	103	110	3308	-16.77
49	20142	JGL 11097	103	130	5024 *	+26.38
50	20143	JGL 11679	101	125	4656	+17.13
51	20144	CN 1867	106	105	4350	+9.43
52	20145	CN 1869	98	95	4289	+7.89
53	20146	CN 1871	89	100	3676	-7.52
54	20147	CN 1302-2136-126-BNKR 2-4	97	118	5882 *	+47.97
55	20148	CR 2340-11	89	135	4411	+10.96
56	20149	TPSR 4	95	95	3707	+6.74
57	20150	R 1432-246-101-3-1-1	89	120	5392 *	+35.64
58	20151	CR 2340-3	90	110	4227	+6.33
59	20152	CR 2340-10	90	135	3033	-23.69
60	20153	GP Dhan	85	130	3216	-19.09
61	20154	VLD 94010	90	100	2910	-26.79
62	Annada	NC	80	105	3975	-----
63	Narendra 97	RC	79	84	3523	-11.37
64	Provat	LC	80	105	3615	-9.05
			C.D. (.05)		710	
			C.V. %		8.6	

Note: * = Observed yield difference was significant; *s = Suitable for upland red and lateritic areas of West Bengal as they were not exceeded 50% flowering in 90 days.

From this investigation, 8 early rice genotypes were screened for red and lateritic areas of West Bengal for future used in breeding programme. These rice genotypes were IET 20133, IET 20106, IET 20121, IET 20124, IET 20126, IET 20127, IET 20103 and IET 20128 (Table - I).

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