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INTERNATIONAL JOURNAL OF CURRENT RESEARCH

International Journal of Current Research
Vol. 5, Issue, 11, pp.3360-3363, November, 2013

ISSN: 0975-833X

RESEA7RCH ARTICLE

EVALUATION OF SOME INTERNATIONAL RICE GENOTYPES IN RED AND LATERITIC AREAS OF WEST BENGAL

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ARTICLE INFO

Article History:
Received 08th August, 2013
Received in revised form
20th September, 2013
Accepted 24th October, 2013
Published online 19th November, 2013

Key words:
Rice genotypes,
International Check,
Red and lateritic region,
West Bengal.

ABSTRACT

The aim of the present investigation was to identify promising rice genotypes from the 115 international rice varieties. The experiments were conducted in Rice Research Station, Bankura, West Bengal using an augmented block design. A field experiment was conducted during Kharif of 2006 and 2007 to assess the yield performance of 115 genetically diverse rice genotypes along with 6 international checks and one local check (Provat), in red and lateritic areas of West Bengal, India. Eight entries namely, WAB 880 SG 27 (50% flowering 98 days, yield 7500 kg./ha), 450-11-1-P28-1-HB (50% flowering 90 days, yield 6666 kg./ha.), WAB 450-11-1-1-P31-HB (50% flowering 95 days, yield 6111 kg./ha.), WAB 878-6-12-1-1-P1-HB (50% flowering 95 days, yield 5444 kg./ha.), D_3 (50% flowering 108 days, yield 5555 kg./ha.), IR 78917-B-6-B-B-B (50% flowering 98 days, yield 5277 kg./ha.), WAB-878-6-37-8-2-P_1-HB (50% flowering 98 days, yield 5000 kg./ha.) and B6144E-MR-6 (50% flowering 79 days, yield 4722 kg./ha.) were selected on the basis of yield performance.

INTRODUCTION

Rice is a complicated crop. It grows under widely divergent agro-ecological situation. It requires specific genotypes for specific region/seasons. State, National and International level multi-location variety trials gave the rice scientist an opportunity to screen the entries under natural condition (Mukherjee 1982). By this process scientist indentified different rice varieties for different geographical regions, e.g. Santosh for lowland regions of Bihar (Thakur *et al.*, 2003). Rajendra Mahsori-1 for sallow low land of Bihar (Sahai *et.al.*, 2004), Puspa for upland areas of West Bengal (Mallick *et al.*, 2012, Mallick *et al.*, 2013). The main objective of the present work was to selection of varieties from the 115 International rice genotypes which will be utilized for the future breeding program.

MATERIALS AND METHODS

This year International Upland Rice Observational Nursery (IURON) contains 115 genetically diverse test entries, six international checks and one local check. The nursery entries originated from seven countries (China, India, Indonesia, Ivory Coast, Malaysia, Philippines and Vietnam) and two IARCS (IRRI and WARDA). The international checks were Vandana, IR 60080-46A, KMP34, IRAT 112, IR 43, UPL Ri-5 and local check was Provat. Seeds samples of 115 rice entry were obtained from seven countries provided by IRRI. Name of the entries and their source were given at Table 1. The experiments were conducted at Rice research Station, Bankura, West Bengal during the kharrif session 2006 & 2007. Seeds of 122 genetically diverse test entries were planted on small study plots (3 m. X 60 cm. size) with suitable and uniform spacing in between two plants (15 cm in a row and 20 cm in a colum) in control condition. Normal dose of fertilizers was applied (N, P_2, O_5, K_2O @ 60: 30: 30 Kg/ ha.).

RESULTS AND DISCUSSIONS

This year nursery contains 115 genetically diverse test entries, six International checks and one local check. The nursery entries originated from seven countries (China, India, Indonesia, Ivory Coast, Malaysia, Philippines and Vietnam) and two IARCS (IRRI and WARDA). From those 115 test entries 8 entries were selected at Rice Research Station, Bankura for further testing during next year. Selected entries were WAB 880 SG 27 (50% flowering 98 days, yield 7500 kg./ha), 450-11-1-P28-1-HB (50% flowering 90 days, yield 6666 kg./ha.), WAB 450-11-1-1-P31-HB (50% flowering 95 days, yield 6111 kg./ha.), WAB 878-6-12-1-1-P1-HB (50% flowering 95 days, yield 5444 kg./ha.), D_3 (50% flowering 108 days, yield 5555 kg./ha.), IR 78917-B-6-B-B-B (50% flowering 98 days, yield 5277 kg./ha.), WAB-878-6-37-8-2-P_1-HB (50% flowering 98 days, yield 5000 kg./ha.) and B6144E-MR-6 (50% flowering 79 days, yield 4722 kg./ha.). The yield (Kg. /ha.) along with some other characters are presented in Table-2 and selected entries are demarked as [*] in the Table-1 and Table-2.

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Table 1. List of 122 germplasm variety and their source of origin

Entry No	Designation	Origin	Entry No	Designation	Origin
1.*	B 6144E-MR-6	INDONESIA	2.	B 8503F-TB-19-B-3	INDONESIA
3.	BP 1027F-MR-29	INDONESIA	4.	BP 222D-MR-2-5	INDONESIA
5.	BP 223F-MR-5	INDONESIA	6.	BP 224D-TB-5-B	INDONESIA
7.	BP 225D-TB-10-B	INDONESIA	8.	BP 229E-MR-1	INDONESIA
9.	BP 241D-TB-15-8	INDONESIA	10.	BP 251E-PN-50	INDONESIA
11.	BP 266E-MR-3	INDONESIA	12.	BP 277D-MR-2-1	INDONESIA
13.	BP 278D-MR-3	INDONESIA	14.	BP 288D-TB-1-3	INDONESIA
15.	BP 303D-MR-5	INDONESIA	16.*	D_3	VIETNAM
17.	GAJAHMUNGKUR	INDONESIA	18.	GUOJING4	CHINA
19.	HB 242	CHINA	20.	IET 13245	INDIA
21.	IR 46	IRRI	22.	IR 64680-81-2-2-1-3	IRRI
23.	IR 67406-6-3-2-3	IRRI	24.	IR 68077-82-2-2-2-3	IRRI
25.	IR 69707-101-2-2-3-3	IRRI	26.	IR 69745-251-2-2-1-1	IRRI
27.	IR 70177-29-1-B-1-1	IRRI	28.	IR 70418-221-2-3	IRRI
29.	IR 70422-95-1-1	IRRI	30.	IRN71137-243-2-2-3-3	IRRI
31.	IR 71144-176-3-2-3-2	IRRI	32.	IR 71145-153-3-3-1-2	IRRI
33.	IR 71706-136-3-2-3	IRRI	34.	IR 71710-78-2-2-2	IRRI
35.	IR 72	IRRI	36.	IR 72861-49-1-3-2	IRRI
37.	IR 72869-25-2-3-3	IRRI	38.	IR 72878-101-2-3-3	IRRI
39.	IR 74052-177-3-3	IRRI	40.	IR 74052-95-3-3	IRRI
41.	IR 78913-B-10-B-B-B	IRRI	42.	IR 78913-B-19-B-B-B	IRRI
43.	IR 78913-B-22-B-B-B	IRRI	44.*	IR 78917-B-6-B-B-B	IRRI
45.	IR 78919-B-18-B-B-B	IRRI	46.	IR 78920-B-2-B-B-B	IRRI
47.	IR 78936-B-6-B-B-B	IRRI	48.	IR 78936-B-9-B-B-B	IRRI
49.	IR 78937-B-4-B-B-B	IRRI	50.	IR 78942-B-2-B-B-B	IRRI
51.	IR 78943-B-13-B-B-B	IRRI	52.	IR 78944-B-8-B-B-B	IRRI
53.	IR 78948-B-21-B-B-B	IRRI	54.	IR 78978-B-22-B-B-B	IRRI
55.	IR 78978-B-23-B-B-B	IRRI	56.	IR 78978-B-24-B-B-B	IRRI
57.	IR 78993-B-1-B-B-B	IRRI	58.	IR 78993-B-22-B-B-B	IRRI
59.	IR 78994-B-18-B-B-B	IRRI	60.	IR 79003-B-23-B-B-B	IRRI
61.	IR 80315-49-B-B-3-B-B-B	IRRI	62.	JATILUHUR	INDONESIA
63.	LIMBOTO	INDONESIA	64.	MAHSURI	MALAYSIA
65.	BP 227B-MR-1-5	INDONESIA	66.	PR 27423-MS6	PHILIPPINES
67.	$PSBRC_2$(IR32809-26-3-3)	IRRI	68.	PSB RC 68	IRRI
69.	PSB RC 70	IRRI	70.	RR 267-8	INDIA
71.	RR 363-152	INDIA	72.	RR 388-2	INDIA
73.	RR 433-2	INDIA	74.	RR 434-1	INDIA

Table 1. (Cont.) : List of 122 germplasm variety and their source of origin

Entry no	Designation	Origin	Entry No	Designation	Origin
75.	TB 154E-TB-2	INDONESIA	76.	TB 165E-TB-12	INDONESIA
77.	TB 177E-TB-28-B-3	INDONESIA	78.	TV 2	VIETNAM
79.	UPLRI-7	PHILIPPINES	80.*	WAB 450-11-1-1-P31-HB	WARDA
81.*	WAB 450-11-1-P28-1-HB	WARDA	82.	WAB 450-15-2-5-2-1-HB	WARDA
83.	WAB 450-16-2-BLI-DRV4	WARDA	84.	WAB 450-25-2-9-4-1-B-HB	WARDA
85.	WAB 450-1-B-P-20-HB	WARDA	86.*	WAB 878-6-12-1-1-P1-HB	WARDA
87.	WAB 878-6-12-1-P_2-HB	WARDA	88.*	WAB 878-6-37-8-2-P_1-HB	WARDA
89.	WAB 878-6-37-8-4-P_1-HB	WARDA	90.	WAB 878-SG 1	WARDA
91.	WAB 878-SG 19	WARDA	92.	WAB 878-SG 44	WARDA
93.	WAB 878-SG 58	WARDA	94.	WAB 878-SG 60	WARDA
95.	WAB 87	WARDA	96.	WAB 880-1-131-1-14-P_2-HB	WARDA
97.	WAB 880-1-131-1-18-P_2-HB	WARDA	98.	WAB 880-1-138-13-1-P_1-HB	WARDA
99.	WAB 880-1-138-18-11-P_1-HB	WARDA	100.	WAB 880-1-138-1-18-9-P_1-HB	WARDA
101.	WAB 880-1-38-19-1-P_2-HB	WARDA	102.	WAB 880-1-19-7-P_1-HB	WARDA
103.	WAB 880-1-138-18-11-P_1-HB	WARDA	104.	WAB 880-SG 6	WARDA
105.*	WAB 880-SG 27	WARDA	106.	WAB 880-SG52	WARDA
107.	WAB 880-SG6	WARDA	108.	WAB 881-10-37-18-3-P_1-HB	WARDA
109.	WAB 881-SG23	WARDA	110.	WAB 881-SG 36	WARDA
111.	WAB 891-SG 26	WARDA	112.	WAB 891-SG 9	WARDA
113.	WAYRAREM	INDONESIA	114.	YUNLU NO.50	CHINA
115.	YUNLUN NO-68	CHINA	116.	IR 43	IRRI
117.	UPLRI-5	PHILIPPINES	118.	IR 60080-46A	IRRI
119.	KMP 34	INDIA	120.	IRAT 112	IVORY COAST
121.	VANDANA	INDIA	122.	PROVAT	INDIA

Table 2. Morphological characterization of 122 rice genotypes

Entry No	50% flowering (days)	Height of plant (cm)	Phenotypic acceptability	Yield (kg./ha)	%increase/ decrease over best check
1.*	79	100	1	4722	121%
2.	78	120	7	2510	64.6%
3.	80	96	7	1860	47.9%
4.	73	107	7	2730	70.36%
5.	80	98	7	1880	48.45%
6.	77	107	5	3040	78.35%
7	82	122	5	3800	97.93
8.	76	112	7	1815	46.77
9.	70	128	3	3500	9020
10.	77	122	7	2130	54.89
11.	74	80	5	3050	78.6
12.	92	137	7	1850	47.68
13.	81	110	7	2444	62.98
14.	75	138	7	1850	47.68
15.	78	113	5	3550	91.49
16.*	108	138	1	5555	143
17.	87	145	3	4200	108.24
18.	80	135	7	2109	54.35
19.	82	140	7	2500	64.43
20.	75	125	7	3130	80.67
21.	107	115	5	3000	77.31
22.	87	110	5	2430	62.62
23.	80	135	7	2270	58.5
24.	102	126	7	2542	65.51
25.	78	70	7	1850	47.68
26.	82	75	7	2120	54.63
27.	77	95	7	2500	64.43
28.	75	100	5	3130	80.67
29.	78	80	5	3670	94.58
30.	79	105	7	1530	39.43
31.	68	115	7	1660	42.78
32.	78	99	5	3028	78.04
33.	75	107	5	3500	90.20
34.	71	95	7	2500	64.43
35.	74	105	7	2178	56.13
36.	82	113	5	3660	94.32
37.	92	130	7	2500	64.43
38.	73	119	7	2145	55.28
39.	107	122	5	3541	91.26
40.	82	112	7	2860	73.71
41.	88	44	7	2500	6.43
42.	92	115	5	3515	90.59
43.	87	125	3	4260	109.79
44.*	98	150	1	5277	136.0
45.	81	112	5	3660	94.32
46.	78	85	7	1500	38.65
47.	98	127	7	2030	52.31
48.	100	122	5	3088	79.58
49.	78	145	5	3541	91.26
50.	77	128	5	3670	94.58
51.	93	98	5	3550	91.49
52.	86	110	7	2618	67.47
53.	85	113	7	2160	55.67
54.	82	95	5	3130	80.67
55.	97	145	7	1821	46.93
56.	82	95	5	3541	91.26
57.	84	122	5	3610	93.04
58.	84	116	5	3508	90.41
59.	84	88	5	3066	79.02
60.	87	80	5	3540	91.23
61.	92	90	7	2430	62.62
62.	87	115	7	2750	70.87
63.	89	166	5	3291	84.81
64.	109	165	5	3800	97.93
65.	93	110	7	1815	46.77
66.	82	110	7	2879	74.2
67.	77	145	7	2150	55.41
68.	95	131	7	2260	58.24
69.	85	120	5	3819	98.42
70.	87	115	7	2000	51.54
71.	105	108	7	4444	114.53
72.	88	118	3	3750	96.64
73.	88	115	5	3600	92.78
74.	85	105	5	3450	88.91
75.	87	135	7	2330	60.05

76.	89	125	5	3144	81.03
77.	89	111	5	3350	86.34
78.	102	142	5	3542	91.28
79.	107	105	5	3880	100
80.*	95	101	1	6111	157.5
81.*	90	115	1	6666	171.8
82.	90	128	7	2450	63.14
83.	85	125	5	3889	100.23
84.	85	110	7	1960	50.51
85.	95	110	3	4277	110.23
86.*	95	118	1	5444	140.3
87.	93	115	6	3600	92.78
88.*	98	25	1	5000	128.86
89.	97	112	5	3500	90.2
90.	85	112	5	3300	85.05
91.	86	97	3	4166	107.37
92.	103	128	7	2620	67.52
93.	87	115	5	3500	90.2
94.	90	100	3	4227	108.94
95.	102	122	7	2230	57.47
96.	89	95	7	2830	72.93
97.	85	95	3	4170	107.47
98.	92	140	7	1398	36.03
99.	93	132	7	2650	68.29
100.	88	109	3	4166	107.37
101.	85	100	7	2500	64.43
102.	89	100	7	1666	42.93
103.	95	108	7	2700	69.58
104.	89	111	7	2222	57.26
105.*	98	112	1	7500	193.29
106.	89	100	7	2000	51.54
107.	87	110	7	2670	68.81
108.	87	107	7	2930	75.51
109.	88	125	5	3333	85.9
110.	84	118	5	3150	81.18
111.	86	110	3	4166	107.37
112.	88	100	7	1944	50.1
113.	107	97	7	2115	54.51
114.	105	17	5	3641	93.82
115.	98	110	7	2777	71.57
116.	76	100	5	3408	87.83
117.	107	115	5	3160	81.44
118.*	108	126	5	3880	100
119.	87	110	5	3400	87.62
120.	97	130	7	2885	74.35
121.	70	120	7	2888	74.43
122.	77	18	5	3319	85.54

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