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Research Paper

IET 19586 – PROMISING EARLY RICE GENOTYPES FOR RED AND LATERITIC AREAS OF WEST BENGAL, INDIA

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Abstract

The aim of the present study was to screen promising early rice genotypes for red and lateritic areas of West Bengal, India. A field experiment was conducted during *kharif* 2006 to assess the yield performance of 18 diverse early rice genotypes along with four check varieties Annada, PSD – 1, Narendra 97 and Provat. Only one early rice genotype namely IET 19586 screened as a promising rice genotype for red and lateritic areas of West Bengal, India.

Key words: Rice, Early, IET 19586, Bankura, Birbhum, Burdwan, Purulia, Paschim Medinipur.

INTRODUCTION

Rice Research Station, Bankura, West Bengal, India is situated in red and lateritic areas of West Bengal. Drought prone areas of West Bengal like districts of Purulia, Bankura, Paschim Medinipur, parts of Birbhum and Burdwan fall under this agroclimatic region. The main characteristics of this region in crop suffer drought stress at different development stages (Mukherjiet *et al* 1982) . So emphasis should be given for identifying promising early rice genotypes which can be able to give fairly to stable yield through a thorough screening under natural condition. Previously several very early (Mallick *et al* 2014), early (Mallick *et al* 2012-13, a-f), mid-early (Mallick , 2014) and late (Mallick *et al* 2014 a,b) rice genotypes has been screened for red and lateritic areas of West Bengal, India. Early rice varieties like Annada, Narendra 97, Provat are popular among the farmer's of that area. But farmer's of that area want to replace them.

The recent investigation was undertaken to screen early rice genotypes suitable for cultivation in uplands of red and lateritic areas of West Bengal.

MATERIALS AND METHODS

Twenty two early genotypes including four checks viz. Annada (National Check), Narendra 97 (Regional Check), PSD-1 (Hybrid Check) and Provat (Local Check) were tested under this experiment. Rice Research Station, Bankura, obtained all the test entries and checks except the Local check variety from Directorate of Rice Research, Rajendranagar, Hyderabad, India as a part of All India Co-ordinated trial AVT-IE (Advanced Variety Trial – I Early) for *kharif* 2006. The experiment was conducted at the farm of Rice research Station, Bankura, West Bengal, India following the statistical design of RBD (Randomised Block Design) with three replications. Seeds of test entries along with checks sown in well prepared dry seedbed on 13.06.2006 and 30 days old seedlings were transplanted on the well puddle field. Plot size was 9.0 sq. m. and plant to plant 15 cm and row to row 20 cm distance was maintained and applied fertilizer dose were N,

P_2O_5 and K_2O : 60,30,30 kg ha^{-1}. Data on yield, 50% flowering plant height and panicles per sq. m. were taken following standard procedures. The weather condition of crop growing season and composition of the genotypes given in Table – 1 and Table – 2 respectively.

Table 1 : Showing the weather condition of crop growing season (*kharif* 2006)

Month	Temperature (°C)		Rainfall (mm)	Relative Humidity (%)	
	Max	Min		Max	Min
June	34.6	24.9	262.4	90.8	58.9
July	32.4	25.1	277.2	93.2	65.2
August	32.5	24.3	152.3	90.0	61.9
September	33.6	24.2	193.0	85.5	68.0
October	32.9	22.5	24.6	88.4	65.7
November	27.0	16.4	5.4	79.6	61.9

Table 2 : Showing the composition of rice genotypes tested under this experiment

Sl No.	IET No.	Designation	Cross Combination
1	18551	RR 433 – 2	IRAT 112 / Annada
2	18906	DRR 105	Sathi-34-46 / Dolapura-38
3	19550	UPR 2654-17-1-1	Pant Dhan 12 / UPR 2251-17-1
4	19555	RPHR 288-6	Vikas / IET 9314
5	19561	AD 02029	ADT 36 / AS 89011
6	19562	NDR-1036-4-3	Bajri Red / IR 15689-173-1-1-13 // IR 6228
7	19563	NDR-1091-3-2	Hans Raj 'A' / IR 36 // N 22
8	19566	BAU-392-02	Suraj Mukhi / IR 36 – 5
9	19567	BAU-175-90	IR 14562 / ARC 10372 // IR 6115-1-1-1
10	19571	Bidhan Dhan – 2	Selection from Assam Rice collection
11	19576	IR 74371-70-1-1-CRR-1	IR 55419 – 4*2 / Wayrarejn
12	19586	OR 1752-3	Badani / Tulasi
13	19589	R 1218-598-1-281-1	Shyamla / Danteswari //Shyamla
14	18805	KJTRH – 4	Hybrid
15	19496	JRH – 4	Hybrid
16	19496	JRH – 5	Hybrid
17	19547	CB 97042	IR 50 / CB 33-2
18	18808	UPRTGH 332	Hybrid
19	Annada	National Check	
20	PSD – 1	Hybrid Check	
21	Narendra 97	Regional Check	
22	Provat	Local Check	

RESULTS AND DISCUSSION

Among the check varieties hybrid check PSD – I gave the highest yield (4805 kg ha^{-1}) as compared to national check Annada (3191kg ha^{-1}), regional check Narendra 97 (3210 kg ha^{-1}) and local check Provat (3479 kg ha^{-1}). So hybrid check PSD – 1 was the best check variety in this trial. (Table – 3). Among the eighteen test entries, only three entries i.e. IET 19586 (5267 kg ha^{1}, 9.61% more yield), IET 19589 (5113 kg ha^{-1}, 6.40% more yield) and IET 19571 (4825 kg ha^{-1}, 0.42% more yield) gave more yield than that of the best check variety PSD – 1. But the yield difference was significant in case of only one genotype IET 19586. IET 19586 was the best entry in this trial in respect of yield. It gave 65.05%, 64.08% and 51.39% more yield than that of national check Annada, regional check Narendra 97 and local check Provat respectively. It's 50% flowering was in 90 days (Table – 4) and was fitted in the early group of rice. It is

established that the chronogically drought affected areas of West Bengal, rice variety must be of early duration and should have drought tolerance of sustaining the periodical drought stress (**Chang and Vergara,1975), (Dutta,1975).**

Table 3 : Showing the yield performance of IET 19586 in comparison with National, Regional, Hybrid and Local Checks and other promising genotypes tested under this experiment.

Sl. No.	IET No. / Variety	Yield (kg ha^{-1})	Yield increase/decrease over NC	Yield increase/decrease over RC	Yield increase/decrease over HC	Yield increase/decrease over LC
1	18551	2921	- 8.46	- 9.00	- 39.20	- 16.03
2	18906	3191	0.00	- 0.59	- 33.59	- 8.27
3	19550	3671	+ 15.04	+ 14.36	- 23.60	+ 5.51
4	19555	3844	+ 20.46	+ 19.75	- 20.00	+ 10.79
5	19561	3575	+ 12.03	+ 11.37	- 25.59	+ 2.75
6	19562	3729	+ 16.86	+ 16.16	- 22.39	+ 7.18
7	19563	3767	+ 18.05	+ 17.35	- 21.60	+ 8.27
8	19566	3133	- 1.81	- 2.39	- 34.79	- 9.94
9	19567	3094	- 3.83	- 3.61	- 35.60	- 11.06
10	19571	4825	+ 51.21	+ 50.31	+ 0.42	+ 38.69
11	19576	3806	+ 19.27	+ 18.56	- 20.79	+ 9.39
12	19586	5267	+ 65.05	+ 64.08	+ 9.61	+ 51.39
13	19589	5113	+ 60.23	+ 59.28	+ 6.40	+ 46.96
14	18805	4094	+ 28.29	+ 27.53	- 14.79	+ 17.67
15	19496	4498	+ 40.95	+ 40.12	- 6.38	+ 29.29
16	19497	3729	+ 16.85	+ 16.16	- 22.39	+ 7.18
17	19547	4597	+ 44.06	+ 43.20	- 4.32	+ 32.14
18	18808	4709	+ 47.57	+ 46.69	- 1.99	+ 35.35
19	Annada	3191	----	- 0.59	- 33.59	- 8.27
20	Narendra 97	3210	+ 0.59	----	- 33.19	- 7.73
21	PSD – 1	4805	+ 50.57	+ 49.68	----	+ 38.11
22	Provat	3479	+ 9.02	+ 8.38	- 27.59	----
C.D. (0.5)		434				
CV%		7.4				

Table 4 : Showing the other plant characteristics of the genotypes under this experiment.

Sl. No.	IET No. / Variety	50% flowering (days)	Plant height (cm)	Panicle/sq. m.
1	18551	79	125	315
2	18906	81	135	341
3	19550	88	113	341
4	19555	90	102	354
5	19561	83	103	350
6	19562	89	112	389
7	19563	90	110	394
8	19566	75	150	330
9	19567	90	145	283
10	19571	89	118	427
11	19576	89	128	395
12	19586	90	140	457
13	19589	87	122	457
14	18805	92	108	374

15	19496	87	115	458
16	19497	89	112	390
17	19547	88	111	476
18	18808	90	127	426
19	Annada	80	90	326
20	Narendra 97	78	75	302
21	PSD – 1	85	98	437
22	Provat	78	107	347

CONCLUSION

It is concluded from the experiment that IET 19586 will be an alternative of Annada, Narendra 97 and Provat in uplands of red and lateritic areas of West Bengal, India.

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REFERENCES

[1] Mukherji, D.K. and Basu Ray Chaudhuri, N.C. 1982 Problems for rice in drought prone areas in West Bengal and characteristics of drought tolerant varieties. Rice in West Bengal vol – iii. Directorate of agriculture. Govt. of West Bengal Writer's Buildings, Calcutta - 700 001. India.

[2] Mallick, G.K., Jana, K., Sardar, G and Ghosh, S. (2014). IET 21285 – A Promising very early rice genotypes for red and lateritic areas of West Bengal, India. (2014). EUROPEAN ACADEMIC RESEARCH – Vol. II, Issue 6 / September 2014, 7995 – 8001.

[3a] Mallick, G.K., Jana, K., Sardar, G. and Biswas, A. (2012) Performance of IET 17509 in farmer's field of upland situation of West Bengal. Environ. Ecol. 30 (4A), 1599 – 1600.

[4b] Mallick, G.K., Jana, K., Sardar, G., Ghosh, S., Mandal, R., and Bhadra, K.K. , Morpho - agronomic characteristics of a newly released rice variety 'Puspa'. (2013) Environ. Ecol. 31(2B), 890 – 893.

[5c] Mallick, G.K. , Mandal, M., Jana, K., Ghosh, A. and Biswas, A., (2013) Puspa – A new rice variety alternative to annada, released for upland areas of West Bengal, India. (2013) Eco. Env. & Cons. 19(4), 1127 – 1129.

[6d] Mallick, G.K. , Mandal, M., . Ghosh, S. , Jana, K., and Mandal, R. (2013). Yield Performance of a promising rice culture IET 17509 in red and lateritic areas of West Bengal. International Journal of Advanced Research. 1(9), 182 – 185.

[7e] Mallick, G.K. ,Kundu, C., Ghosh, S. and Sinha, A.K. (2013). Evaluation of some international rice genotypes in red and lateritic areas of West Bengal. International Journal of Current Research. 5(11), 3360 - 3363.

[8f] Mallick, G.K. and Kundu, C. (2013). Screening of early rice genotypes for red and lateritic areas of West Bengal. (2014). Research in Plant Biology. 4(2), 27 - 30.

[9] Mallick, G.K. and Kundu, C. (2014). Screening of mid-early rice genotypes for red and lateritic areas of West Bengal, India. J. Recent Adv. Agr. 2(4), 208 - 212.

[10a] Mallick, G.K. , Jana, K., Ghosh, S., Sardar, G., and Bhadra, K.K., (2013). Morpho-agronomic characteristics of a newly released rice variety BNKR-1(Dhiren) (2013). Sci. Res. Rept., 3(2), 223 - 228.

[11b] Mallick, G.K. , Jana, K., Ghosh, S. and Sardar, G. (2014). Screening of three promising rice genotypes for rainfed shallow low lands of red and lateritic areas of West Bengal, India. J. Appl. & Nat. Sci. 6(1), 258 - 261.

[12] Chang, T.T., and Vergara, BS (1975). Varietal diversity and morpho-agronomic characteristics of upland rice, In: research in upland rice . IRRI. Los Banos, Philippines pp 72 - 79.

[13] De Dutta S.K. (1975). Up land rice around the world, IRRI, Los Banos, Philippines, pp. 2 - 11.