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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

### **RESEARCH ARTICLE**

## YIELD PERFORMANCE OF A PROMISING RICE CULTURE IET 17509 IN RED AND LATERITIC AREAS OF WEST BENGAL

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#### Manuscript Info

### Abstract

Manuscript History:

Received: 07 October 2013 Final Accepted: 22 October 2013 Published Online: November 2013

*Key words:* Rice variety, Puspa, IET 17509, Red and Lateritic areas. A Multilocational field experiment was conducted for three consecutive years (2006 – 2008) to test the yield performance of IET 17509 before release as "Puspa" in 2011 by SVRC, West Bengal, along with five promising lines of rice and two checks Annada and Provat in red and lateritic areas of west Bengal. IET 17509 showed consistently better performance over the best check variety Annada. It gave 21.59% more yield than Annada in 3 years pooled data basis. This is to be noted that IET 17509 was developed at Rice Research Station, Bankura, West Bengal, India.

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### Introduction

Yield stability depends upon complex characteristics, both genetic and environmental. Well defined parameters are there to find out genetic stability of a variety but cultural manipulation may induce to a certain extent of yield stability by partly eliminating the environmental constraints under stress condition. State, National and International level multi-location variety trials gave the rice scientists an opportunity to screen the entries under natural conditions. By this process rice scientists identified different varieties suitable for different regions e.g. Vivek Dhan 82 for the Indian Himalaya (Sharma et. al. 2003), Santosh for lowland 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) etc.

Drought prone districts of Purulia, Bankura, Paschim Medinipur, Parts of Birbhum and Burdwan are fall under red and lateritic areas of West Bengal. Screening of suitable variety is one of the major steps that plays a very important part in increasing yield. The recent investigation was undertaken to screen the entries of rice suitable for cultivation in upland of red and laterite areas of west Bengal.

## **Material and Methods**

The field experiment was conducted in consecutive three years 2006 to 2008 in different farms of West Bengal and one farmer's field. Six promising early entries namely IET 17035, IET 17037, IET 17509, IET 18755, IET 19586 and IET 19589 were tested using Annada and Provat as check. During *kharif* 2006 they were tested in three farms (Rice Research Station Farm, Bankura, Model Farm, Joyrambati, Bankura, Kashipur S.A.R.F., Purulia and one farmer's field (Village Moldanga, Block Garhbeta – 1, Dist: Paschim Medinipur). During *kharif* 2007 they were tested in four farms (Rice Research Station's Farm, Bankura, Dryland Research Station Farm, Susunia, Bankura, Model Farm, Joyrambati, Bankura, Dryland Research Station Farm, Susunia, Bankura, Model Farm, Joyrambati, Bankura and Kanksa Farm, Kanksa, Burdwan) and during *kharif* 2008 in three farms (Rice Research Station at the rate of 60 : 30 : 30. During transplanting row to row 20 cm and hill to hill 15 cm distance was maintained. Observation of yield parameter was taken by following standard procedures. As all the promising rice cultures were in early duration group (100-115 days), Annada and Provat used as checks.

## **Result and Discussion**

The yield data of six promising rice cultures IET 17035, IET 17037, IET 17509, IET 18755, IET 19586 and IET 19589 along with two checks Annada and Provat presented in Table 1, Table 2, Table 3 and Table 4. The data showed that none of the entries except IET 17509, showed better yield performance than the best check Annada for consecutive three years (2006, 2007 and 2008). The yield of IET 17509 was found to be significantly higher than the best check variety Annada for the consecutive three years (2006, 2007 and 2008). On three years pooled yield data basis IET 17509 gave 21.59% more yield than the best check Annada.

In upland of red and laterite areas of west Bengal Annada is the most popular among the farmers. The new rice culture IET 17509 (CNB 1259-5-2-1) developed at Rice Research Station, Bankura, West Bengal, will be helpful to farmer's to achieve overall increase in rice yield. It was released by the SVRC, West Bengal, in 2011 and started to become popular among the farmers (Mallick *et. al.* 2012, Mallick *et. al.* 2013).

#### Table 1: Yield performance of IET 17509 in Multilocational adaptive trial during kharif 2006

Sl	Entry	Designation		Mean yield			
No.			Rice Research Station Farm, Bankura	Model Farm, Joyrambati, Bankura	S.A.R.F. Kashipur Purulia	Moldanga, Garhbeta Paschim Medinipur (farmer's field	(kg ha <sup>-1</sup> )
1	IET 17035	CNB 1253-2-5	3150	3330	3035	3530	3261
2	IET 17037	CNB 1253-4-15	3360	3150	2833	3650	3248
3	IET 17509	CNB 1259-5-2-1	3570	3550	3090	3700	* 3477
4	IET 18755	HKR 01-44	3220	2780	2600	3250	2962
5	IET 19586	OR 1752-3	3000	3240	3025	3345	3152
6	IET 19589	R 1218-598-1-281-1	3250	3050	2875	3075	3062
7	Annada	Check Variety	2980	3400	2650	3500	3132
8	Provat	Check Variety	3018	3245	2800	3350	3103
CD at 0.5%							232
CV %							4.98

\* Superior to Annada

### Table 2: Yield performance of IET 17509 in Multilocational adaptive trial during kharif 2007

Sl	Entry	Designation		Mean			
No.			Rice	Dryland	Model	Kanksa	yield
			Research	Research	Farm,	Farm,	(kg ha <sup>-1</sup> )
			Station	Station	Joyrambati,	Burdwan	
			Farm,	Farm,	Bankura		
			Bankura	Susunia,			
				Bankura			
1	IET 17035	CNB 1253-2-5	3650	3100	3200	4600	3638
2	IET 17037	CNB 1253-4-15	3500	2700	3200	4117	3379
3	IET 17509	CNB 1259-5-2-1	4618	4300	4400	4866	* 4546
4	IET 18755	HKR 01-44	3500	2700	5200	4566	3991
5	IET 19586	OR 1752-3	4250	2700	3600	4517	3979
6	IET 19589	R 1218-598-1-281-1	4500	4500	4000	4616	4404
7	Annada	Check	3500	4700	2800	4316	3829
8	Provat	Check	3915	3100	2400	3817	3308
CD at 0.5%							599.6
CV %							9.85

\* Superior to Annada

SI	Entry	Designation		Mean			
No.			Rice	Model Farm,	District	yield	
			Research	Joyrambati,	Seed Farm,	(kg ha <sup>-1</sup> )	
			Station	Bankura	Susunia,		
			Farm,		Bankura		
			Bankura				
1	IET 17035	CNB 1253-2-5	3150	4000	3360	3503	
2	IET 17037	CNB 1253-4-15	3480	3300	3575	3452	
3	IET 17509	CNB 1259-5-2-1	4800	5500	4550	* 4950	
4	IET 18755	HKR 01-44	4100	4300	3980	4127	
5	IET 19586	OR 1752-3	3600	3500	3350	3483	
6	IET 19589	R 1218-598-1-281-1	3350	3000	3500	3283	
7	Annada	Check	3750	3500	3870	3707	
8	Provat	Check	3250	3000	3450	3233	
CD at 0.5%							
CV %							

Table 3: Yield performance of IET 17509 in Multilocational a	daptive trial	during khar	if 2008
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\* Superior to Annada

#### Table 4: Percent yield increase or decrease over best check variety Annada (3 years pooled data basis)

Sl No.	Entry	Designation	Average Mean Yield (kg ha <sup>-1</sup> ) Year wise		3 years pooled	% increase or decrease over best check Annada	
			2006	2007	2008	Mean (kg ha <sup>-1</sup> )	
1	IET 17035	CNB 1253-2-5	3261	3638	3503	3467	- 2.5
2	IET 17037	CNB 1253-4-15	3248	3379	3452	3360	- 5.5
3	IET 17509	CNB 1259-5-2-1	3477	4546	4950	4324	+ 21.59
4	IET 18755	HKR 01-44	2962	3991	4127	3693	+ 3.85
5	IET 19586	OR 1752-3	3152	3979	3483	3538	- 0.05
6	IET 19589	R 1218-598-1-281-1	3062	4404	3283	3583	+0.76
7	Annada	Check	3132	3829	3707	3556	
8	Provat	Check	3103	3308	3233	3215	- 9.58

### Acknowledgements

The authors would like to thanks Dr. P. K. Maity, Chief Agronomist, FCRS, Burdwan; Mr. S. R. Patra, Joint Director of Agriculture (Research); Dr. P. Bhattacharyay, Director of Agriculture, Writers' Building, Klokata-1 for their valuable guidance and encouragement during the period of this research programme.

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