



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; SP1: 2620-2622

P Surendra
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

Komala NT
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

Gurumurthy R
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

H Shivanna
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

SB Yeledalli
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

Correspondence
P Surendra
AICRIP, Agriculture Research
Station, UASD, Mugad,
Karnataka State, India

Identification of rice genotypes for Semi Deep Water situation during *Kharif* seasons of Western Ghat regions of Karnataka State

P Surendra, Komala NT, Gurumurthy R, H Shivanna and SB Yeledalli

Abstract

Experiment was conducted under assured rainfall conditions to test four rice genotypes against National (Sabita), Regional (Purnendu) and local (Asha) check varieties for their 50 % flowering, plant height, panicle length, grain yield and straw yield Kg ha^{-1} , during 2010, 2011 and 2012 *Kharif* season to identify the suitable genotype for the region. 50 per cent flowering differed significantly among genotypes tested maximum days taken for 50 % flowering was recorded in Asha 141.3 days in 2011, 113.5 days in IET 21341 during 2012. During 2012, 50 % flowering was found to be highest 113.5 in IET 21341. Plant height showed significant difference among genotypes in all three years. Maximum plant height of 130.6, 144.3 and 107.6 was recorded in IET 21347, Purnendu and Sabita during 2010, 2011 and 2012 respectively. Panicle length differed significantly among genotypes in all three tested years, maximum panicle length of 25.3, 26.9 and 24.3 cm was recorded in Purnendu, Asha and Purnendu during 2010, 2011 and 2012 respectively. Number of panicles per square meter found to be differed significantly among genotypes during 2010. Maximum number of panicles recorded in IET 21347 (266) followed by Sabita (245). Grain yield varied significantly among genotypes in all three years of test. Maximum grain yield of 8280, 6074 and 5947 Kg ha^{-1} recorded in IET 21341, Purnendu and IET 21347 during 2010, 2011 and 2012 respectively. Straw yield differed significantly among genotypes tested all three years. Maximum straw yield of 22980 and 19614 Kg ha^{-1} was recorded in Sabita and Purnendu during the year 2010 and 2011 respectively. Highest hulling and milling percentage, was recorded in IET 21347 (80.5 % and 72.8 %), moderate ASV with 22.59 % AC and 25 mm GC. Both the genotypes viz., IET 21341 and 21347 were showed significantly superiority over checks with desirable quality parameters, may be recommended for the farmers under shallow low land situation of Uttara Kannada district of Karnataka State.

Keywords: Rice, varieties, yield components

Introduction

Rice production scenario in the country during the past decade presents a gloomy picture of compound growth rate of just 1.7 per cent despite the highest production figures (103 MT from 143 million hectares) posted during 2011-12. Based on these recent trends several Scenarios for the future has been projected. Land under rice is likely to be reduced further and could stabilize at about 40 M ha. Relative contribution of irrigated rice to the total production is likely to remain same though, on one hand, area under irrigation is likely to increase through popularization of boro rice in the eastern part but, on the other hand, likely to be reduced by urbanization, industrialization and crop diversification due to reduced profitability and threat to sustainability in rice-wheat area. To meet a production target of 125 MT by 2025, all inclusive of food requirement, seed for cultivation, storage in buffer stock and a share for exports, productivity in irrigated area needs to be enhanced by 1.5 tons ha^{-1} and in rainfed lowlands by about 1 tons ha^{-1} .

In Karnataka around 50 per cent of the total rice area (14.50 lakh ha) is under rainfed condition in which around 3 lakh hectare area is under transplanted high rainfall situation. Major drill sown rice area is spread along the Western Ghat Hills region of Karnataka in the districts of Madikere, shivamogga, Uttar Kannada, parts of Belgaum, Chikkmagalore and Dharwad. The varietal requirement is also very much specific in this situation as evidenced by low (47%) adaptation of high yielding varieties (HYV) as against 80 per cent adaptation of high yielding varieties in the state of Karnataka and 73 per cent in India. One of the reasons for such a low level of HYV adaptation in rainfed ecology is due to non-availability of truly potential cultivars specifically suited for such situations. This emphasizes the need for developing / identifying high yielding varieties/hybrids suitable to this region.

The average productivity of this region is 3 to 4.5 t ha^{-1} , moderately high compared to state

average yield (2.30 t ha⁻¹) which is far below the potential of the region, obviously is a consequence of lack of suitable varieties. As well as due to several specific problems of this region. This tract is generally grouped into three situations based on elevation and water holding capacity viz., Uplands, Midlands and Lowlands. The moisture availability in these conditions is for 130-140 days, 150-170 days and more than 170 days respectively. The good rice harvest of 5-6 t ha⁻¹ in midlands and 6-8 t ha⁻¹ in lowlands is possible in favourable seasons.

Material and Methods

Seven genotypes along with check varieties were evaluated during Kharif season from 2006 to 2008 at Agriculture Research Station (Paddy), Sirsi, Karnataka. The nursery sowing was taken up in the first week of June and planting of seedlings was done in the end of 4th week of June. The experiment was laid out in a randomized complete block design with three replications. Seedlings aged 20-25 days were transplanted with a spacing of 20 X 15 cm, five tonnes of FYM was applied during land preparation. Recommended dosage of P, 50 % K and N (75:75:90 kg NPK ha⁻¹) was applied at the time of planting, 25 % of N and 50 % of K was top dressed at 30 and 25 % of N at 40 days after planting. Observations on days to 50 % flowering, plant height, panicle length, number of panicles per hill, grain and straw yield were recorded at appropriate stage.

Results and Discussion

Experiment was conducted under assured rainfall conditions to test four rice genotypes against National (Sabita), Regional (Purnendu) and local (Asha) check varieties for their 50 % flowering, plant height, panicle length, grain yield and straw

yield Kg ha⁻¹, during 2010, 2011 and 2012 (Table 1 & 2). Kharif season to identify the suitable genotype for the region. 50 per cent flowering differed significantly among genotypes tested maximum days taken for 50 % flowering was recorded in Asha 141.3 days in 2011, 113.5 days in IET 21341 during 2012. During 2012, 50 % flowering was found to be highest 113.5 in IET 21341. Plant height showed significant difference among genotypes is all three years. Maximum plant height of 130.6, 144.3 and 107.6 was recorded in IET 21347, Purnendu and Sabita during 2010, 2011 and 2012 respectively. Panicle length differed significantly among genotypes in all three tested years, maximum panicle length of 25.3, 26.9 and 24.3 cm was recorded in Purnendu, Asha and Purnendu during 2010, 2011 and 2012 respectively. Number of panicles per square meter found to be differed significantly among genotypes during 2010. Maximum number of panicles recorded in IET 21347 (266) followed by Sabita (245). Grain yield varied significantly among genotypes in all three years of test. Maximum grain yield of 8280, 6074 and 5947 Kg ha⁻¹ recorded in IET 21341, Purnendu and IET 21341 during 2010, 2011 and 2012 respectively. Straw yield different significantly among genotypes tested all three years. Maximum straw yield of 22980 and 19614 Kg ha⁻¹ was recorded in Sabita and Purnendu during the year 2010 and 2011 respectively. Highest hulling and milling percentage, was recorded in IET 21347 (80.5 % and 72.8 %), moderate ASV with 22.59 % AC and 25 mm GC (Table 2). Both the genotypes viz., IET 21341 and 21347 were showed significantly superiority over checks with desirable quality parameters, may be recommended for the farmers under shallow low land situation of Zone IX of Karnataka State.

Table 1: Performance of two genotypes and checks for 50 % flowering (days), Plant height (cm), Panicle length (cm), panicle per square meter (number), Grain yield (Kg ha⁻¹) and Straw yield (Kg ha⁻¹) during 2011-12 Kharif season under high rainfall tract (Zone 9) of Karnataka State.

Entries	50 % Flowering			Plant Height (cm)			Panicle length (cm)			Panicles / m ²			Grain Yield (Kg ha ⁻¹)			Straw Yield (Kg ha ⁻¹)		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
IET 21341	120	116	129	100.3	104.6	71.7	24.1	24.9	22.5	238	294	612	8280	5768	5947	13700	13654	11882
IET 21347	115	113	132	130.6	102.9	76.7	24.1	23.9	21.8	266	191	588	5100	4236	5625	21170	7307	10450
Asha	140	141	123	104.7	119.5	88.8	23.5	26.9	21.7	186	300	574	6010	5124	4306	13410	6224	9711
Purnendu (RC)	120	131	118	126.4	144.3	107.6	25.3	25.5	24.2	172	191	469	6300	6084	5121	17500	19614	10877
Sabita (NC)	118	128	98	113.3	143.8	118.1	24.1	24.5	21.8	245	185	357	7840	5556	3007	22980	17521	9355
G Mean	123	123	125	113.8	116.8	91.3	24.4	24.7	22.4	217	232	504	8280	4906	4059	13700	10255	10480
C.V.	18.14	5.31	6.79	2.72	3.05	4.04	7.06	4.04	4.11	12.16	8.14	19.15	7.00	16.75	22.64	14.59	17	10.42
C.D.(0.05)	N.S.	11.62	19.16	6.68	6.34	8.34	N.S.	1.78	N.S.	57.08	N.S.	N.S.	1520	1497	2079	5520	3054	N.S.

Table 2: Grain quality parameters of two genotypes and checks during 2011-12 Kharif season (Directorate of Rice Research 2013).

Entries	Hull %	Mill %	HRR %	KL (mm)	KB (mm)	L/B	Grain type	Grain chalk	ASV	AC %	GC
IET 21341	78.9	68	63.4	4.77	2.42	1.97	SB	VOC	5	21.51	25
IET 21347	80.5	72.8	63.3	6.46	2.29	2.82	LB	VOC	4	22.59	25
Asha	78.7	71.2	55	5.51	2.47	2.23	SB	VOC	4	21.09	63
Purnendu (RC)	80.2	71.1	69.2	4.85	2.21	2.19	SB	VOC	4	23.87	22
Sabita (NC)	79.6	70.2	67	6.89	2.15	3.2	LS	VOC	4	22.05	23

References

- Gomez KA, Gomez AA. Statistical procedures for agricultural research, 2 ed. John Wiley and sons, Inc, 1984, 680.
- International Rice Testing Program, Standard Evaluation System for Rice, 4th Ed. International Rice Research Institute, PO Box 933, 1099, Manila, Philippines, 1996, 52.
- Directorate of Rice Research, 2011, Progress Report, 2010, Volume I: Varietal Improvement, All India Coordinated Rice Improvement Programme (ICAR), Directorate of Rice Research, Rajendranagar, Hyderabad-500 030, (A. P.)
- Directorate of Rice Research, 2012, Progress Report, 2011, Volume I: Varietal Improvement, All India Coordinated Rice Improvement Programme (ICAR), Directorate of Rice Research, Rajendranagar, Hyderabad-500 030, (A. P.) Pp 1.32 - 1.61.
- Directorate of Rice Research, 2013, Progress Report, 2012, Volume I: Varietal Improvement, All India

- Coordinated Rice Improvement Programme (ICAR), Directorate of Rice Research, Rajendranagar, Hyderabad-500 030, (A. P.) Pp 1.32 - 1.61.
6. Shobha Rani N, Prasad GSV, Subba Rao LV, Sudharshan I, Manish K, Pandey VR *et al.* HIGHYIELDING RICE VARIETIES OF INDIA. Technical Bulletin No. 33, Directorate of Rice Research, Rajendranagar, Hyderabad 500 030, Andhra Pradesh, India, 2008, 12&74.
 7. Shobha Rani N, Subba Rao LV, Viraktamath BC. National Guidelines for the conduct of tests for Distinctness, Uniformity and Stability: Rice (*Oryza sativa* L.) – ZeroDraft, Directorate of rice Research, Rajendranagar, Hyderabad-500030, Andhra Pradesh, India. 2006, 39.
 8. Srinivasa Rao K, Nagaraju M, Benera KS, Amal Ghosh. Production Technology for Deepwater Rice. CRRI Technology Bulletin, 38, Central Rice research Institute, Cuttack, Orissa, 2009, 753-006.
 9. Surendra P, Shivanna H, Naik ST. Performance of rice genotypes under semi-deep water situation during Kharif seasons at Sirsi, *International Rice Research Notes*: 2009, (0117-4185) #692