

Research Note

Pratap Sugandh-1 (RSK-1091-10-1-1) “A new high yielding aromatic rice variety for transplanting situation.

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Abstract

The aromatic rice variety “Pratap Sugandh-1 (RSK-1091-10-1-1)” was developed from the cross IET 13846 (Surabhi) / Pusa basmati-1 varieties with high yield potential and grain quality. It was released by the State Seed Sub Committee on Crop Standard, Notification & release of varieties for Agricultural crops, Govt. of Rajasthan, in its meeting held on 22 Aug. 2012 for Rajasthan State for irrigated ecosystem.

Keywords:

Rice, aromatic, variety release

Rice (*Oryza sativa* L.) is one of the most important cereal crop of the world and about 90 per cent of the people of South east Asia consume rice as staple food. About 20 per cent of the total calorie supply worldwide comes from rice and especially in Asia; more than 2 billion people derive 60-70 per cent of their daily energy requirement. According to FAO, the productivity level of rice in India is very low (3.21t/ha) as compared to the average productivity of China (6.35t/ha) and world (4.15t/ha). The Agricultural Statistics of 2009 reveals the productivity of various states like, Punjab (4.022 t/ha), Andhra Pradesh (3.247 t/ha), Haryana (2.726 t/ha) and Uttar Pradesh (2.170 t/ha) Singh *et al.* 2011. In India, the productivity of rice is very low due to non-availability of pure seed of high yielding varieties and the farmers adopted traditional pattern of rice cultivation. To achieve this objective, meticulous efforts were made in this direction resulting, a new high yielding and medium duration aromatic rice variety “Pratap Sugandh-1 (RSK-1091-10-1-1) have been developed at Agricultural Research Station, Ummedganj, Kota (Raj.)

The variety “Pratap Sugandh-1 (RSK-1091-10-1-1)” was developed from the cross IET 13846 (Surabhi) / Pusa basmati-1 varieties with high yield potential and grain quality. It was released by the State Seed Sub Committee on Crop Standard, Notification & release of varieties for Agricultural crops, Govt. of Rajasthan, in its meeting held on 22 Aug. 2012 for Rajasthan State for irrigated ecosystem. It was notified in the gazette of India, vide notification no REGD No. D.L. 33004/99 - S.No. 2817 (E) dated 19 Sept. 2013.

The newly released variety was tested under All India Coordinated trials during *Kharif* 2009 in Initial Varietal Trial-basmati (IVT-BT) and Advanced Varietal Trial –basmati (AVT-BT) during *Kharif* 2010 of basmati growing areas

(Table-1). It was found better as compare to the checks and showed grain yield performance in Coordinated, Station and Multilocation trials. The Coordinated trials conducted for two years, it had a mean grain yield 44.42q /ha with a yield superiority of 12.56 per cent over Pusa basmati-1 and 44.71 q/ha over taraori basmati (Anonymous 2009 and 2010). State varietal trial conducted for five years, it had a mean grain yield of 50.98 q/ha with a yield improvement of 24.52 per cent over Pusa basmati-1 and 56.50 per cent over taraori basmati, respectively (Anonymous 2011). During *Kharif* 2011, multilocation trials were also conducted at five locations. It yielded 46.99 q/ha with a yield improvement of 13.16 and 38.61 percent over Pusa basmati-1 and taraori basmati, respectively (Anonymous 2009, 2010 & 2011).

It is a medium duration variety which matures in 135-140 days. It has 105-120 cm plant height, 5-8 effective tillers/plant, 280-320 no. of panicles/sq.m., 29.0 - 32.0 cm panicle length and 1000 seed weight is 22.0 - 23.4 gm. Its leaves are broad and upright dark green with smooth surface, flower colour is white and seed colour is creamish yellow. At the time of maturity, panicles are long, compact, fully exerted with long slender grain with high fertility of spikelets. It has non-shattering behavior, responsive to fertilizer, resistance to lodging and moderately resistance to major diseases and insect-pest. Newly released variety “Pratap sugandh-1 “have grain and cooking quality characteristics (Table-2). In agronomic trials, variety Pratap Sugandh-1 (RSK-1091-10-1-1) gave significantly higher grain yield (4980 kg/ha) with an improvement of 12.69 % and 16.13 % over Pusa basmati-1 and Pusa sugandha-4, respectively, at different nitrogen levels (Data not shown).

The newly released aromatic rice variety Pratap sugandh-1 could be an appropriate choice for replacing other basmati varieties, which are not



only low yielding but also highly susceptible to insect pest and diseases, like, blast and bacterial leaf blight.

The released variety “Pratap sugandh-1 (RSK-1091-10-1)” was at par for most of the quality and quantitative traits in comparison to the check Pusa basmati-1 (yield check) and Taraori basmati (Quality check). The variety has average yield 4442 kg/ha in co ordinated trial, 5098 kg/ha in state varietal trial and 4699 kg/ha in multilocation trials with the yield superiority of 12.56, 24.26 and 13.16 per cent over Pusa basmati-1 in co ordinated, state and multilocation trials, respectively. This variety resistance to lodging and moderately resistant to blast and bacterial leaf blight. Cultivation of newly released variety “ RSK-1091-10 would prone boon for meeting the higher grain yield with quality and food requirement for sustaining their live hood and stabilizing productivity of aromatic rice in the irrigated ecosystem of Rajasthan.

References:

- Anonymous, 2009. Annual progress report, Crop Improvement, DRR, Hyderabad, table 4.1 pp 1.293.
- Anonymous, 2010. Annual progress report , Crop Improvement , DRR, Hyderabad, table 4.19 pp 1.300
- Anonymous, 2011. Research Summary, Humid South – Eastern plain Zone Vth, Agricultural Research Station, Kota.
- Singh S.K., Singh C. M. and Lal G. 2011. Assessment of genetic variability for yield and its component characters in rice (*O. sativa* L.). *Res. in Plant Bio.*, 1 (4): 73-76.



Table 1. yield performance of Pratap Sugandh-1 (RSK-1091-10-1-1) in different trials.

Year of testing	Mean grain yield (kg/ha)			
	Pratap Sugandha -1 (RSK-1091-10-1-1)	Pusa Basmati-1 (Yield check)	Taraori Basmati (Quality Check)	Pusa Sugandha-4 (Best check)
Co-ordinated trials				
2009 (9) [#]	4809	4499	3203	-
2010 (10) [#]	4075	3394	2936	-
Mean	4442.00	3946.50	3069.50	-
% increase Over		(+) 12.56	(+) 44.71	
[#] = Number in parenthesis indicate the number of location where trial were conducted				
Source: - DRR Annual Progress Report, Crop Improvement 2009 (Table 4.1 pp 1.293) and 2010 (table 4.19 pp 1.300).				
Station Trial at ARS, Kota				
2007	4610	3812	2970	4654
2008	4654	3945	3102	4565
2009	5256	3923	3302	4809
2010	5762	4446	3456	5097
2011	5208	4344	3457	4600
Mean	5098	4094	3257	4745
% increase over		(+) 24.52	(+) 56.50	(+) 7.44
Source :- Research summary (2011): Humid south –Eastern plain Zone V th , Agricultural Research station, Kota				
Multilocation Trial (Kharif 2011)				
ATC, Nanta farm	4757	4316	3425	4561
ATC, Bundi	4038	3773	3260	4148
KVK, Bundi	4854	4388	3690	4454
ARS, Banswara	4640	3860	3120	4000
ARS, Kota	5208	4344	3457	4600
Mean		4136	3390	4353
% increase over		(+) 13.61	(+) 38.61	(+) 73.94

Table 2. Qualitative characteristics of newly released aromatic rice variety “Pratap Sugandh-1”.

Characteristics	Pratap Sugandh-1 (RSK-1091-10-1-1)	Pusa Basmati-1 (Yield check)	Taraori Basmati (Quality check)
Hulling (%)	78.00	77.15	77.35
Milling (%)	71.15	69.80	68.00
Head Rice Recovery (%)	59.75	57.10	54.60
Kernel Length (mm)	7.58	7.56	7.43
Kernel breadth (mm)	1.70	1.73	1.76
Length / Breadth ration	4.46	4.37	4.21
Grain Type	LS	LS	LS
Alkali value	6.00	7.00	5.00
Water Uptake (ml)	235	340	247
Volume Expansion ratio	5.0	4.75	4.25
Kernel length after Cooking (mm)	14.80	15.90	15.15
Elongation ratio (%)	1.95	2.11	2.17
Amylose Content (%)	24.90	24.47	24.10
Aroma	Present	Present	Present

Note: Mean of two year 2009 & 2010; Directorate of Rice Research, Hyderabad.