

A Yield potential study of short grain traditional aromatic varieties of red and lateritic region of West Bengal in comparison with short grain elite rice lines

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Abstract

Yield potentiality of twenty one elite short grain aromatic cultivars along with three traditional aromatic cultivars viz. Badshabhog, Kalonunia and Danarguri were evaluated in on farm condition during the kharif 2015 and 2016. Elite rice variety NDR-9539 recoded highest yield (2450 kg/ha) followed by traditional short grain variety Danarguri (2450 kg/ha). The yield performance results clearly indicated that traditional aromatic short grain varieties have high yield potentially in comparison with other short grain eliterice lines of red and lateritic region of West Bengal.

Key words: Aromatic variety, red and lateritic region, West Bengal, elite variety, yield potentiality.

Introduction

Red and lateritic region of West Bengal was a home land of thousands of traditional rice varieties with important agronomic characters like aroma, drought resistant, pest resistant, submerge resistant and so on. The number of these varieties had been decreasing vary fast after the introduction of elite varieties of rice into the farmers field (Sinha and Mishra, 2013). In most the cases traditional varieties were defeated by the elite rice varieties in respect of yield potentiality (Sinha and Mishra 2014). But it was observed that some traditional varieties are also give high yield in comparison with the present elite varieties.

The main aim of the present investigation is to study the yield potentiality of three traditional aromatic rice cultivars viz. Badshabhog, Kalonunia and Danarguri in comparison with the other twenty one short grain elite varieties which are widely cultivated in major part of the agricultural land of West Bengal.

Materials and Method

The present investigation was carried out using 3 traditional short grain aromatic rice cultivars namely Badshabhog, Kalonunia and Danarguri, collected from the lateritic region of district of Bankura, West Bengal, during kharif season of 2013 and 21 aromatic short grain elite rice cultivars collected from Rice research station, Bankura, West Bengal. The In-Situ cultivation of collected landraces of traditional rice varieties was conducted at the test farm of ARSW Society (an indigenous farmers group) situated at

village of Ranbahal (22°38'N latitude and 86°36'E-87°47'E longitude with an altitude of 78 meters above sea level). The soil reaction gives a slightly acidic pH of 5.2, with low soluble salts (EC of 0.06dS m⁻¹), medium organic carbon content (0.49%), Total N (0.051%), medium in available P (45 kg ha⁻¹) and K (210 kg ha⁻¹).

The materials were grown using completely randomized block design with three replications. Each variety was transplanted (45 day's old seedling) in a plot of 6m² with a spacing of 20cm. between rows and 15cm. between plants in a row.

A random sample of five competitive plants were used for observations on different grain characters under study. Various morphological characters of grains were taken as per the guideline of DUS test (Shobarani, 2004).

Normal fertilizer had been given in the ration of N:P₂O₅:K₂O @ 50:25:25 kg./ha.

Results and Discussion

Different quantitative morphological (Plant height), physiological (50% flowering) and agronomic (Panicles/sq.M, Yield (Kg./ha) characters has been studied and are given at Table 1. Highest plant height has been recorded in elite variety NDR-9542 (143 cm) followed by traditional rice cultivars Danarguri (142 cm) and lowest plant height has been recorded in traditional variety Badshabhog (91 cm) followed by elite variety CR 2615-1 and Gandhasala (93 cm each).

Highest day for 50% flowering was observed on elite variety Jeerakasala (144 days) followed by Danarguri (123 days) a traditional variety and lowest duration was observed on elite variety JGL-15336 (144 days). In agronomic characters highest Panicle/sq.m has been recorded on two elite varieties namely RNR 2465-1 and NDR-6235 (390 panicles /sq.M both) and lowest data has been recorded on elite variety Gandhasala (only 173 paciles/sq.M.).

The highest yield was recorded on elite variety IET 21055 (2480kg/ha) followed by Danarguri (2450 Kg/ha).

Table No 1. Agronomic and yield performance of elite and traditional short grain aromatic rice varieties during Kharif 2015.

Sl. no	Designation	Days to 50% flowering	Panicle/sq.M	Plant Height	Yield (kg/ha)
1.	Jeerakasala	144	200	128	1400
2.	Gandhasala	120	173	93	950
3.	CR 2626-3-3-3-1	117	337	125	1680
4.	RNR 2465-1	115	390	114	1710
5.	KJT-4-4-36-12-13-29	118	384	146	1700
6.	JGL-15281	122	323	128	1500
7.	JGL-15336	114	290	124	1340
8.	NDR-6235	117	390	123	2350
9.	NDR-6242	122	365	120	2350
10.	Narendra Lalmoti	118	204	119	1120
11.	NDR-8018	120	324	120	1970
12.	NDR-9542	116	376	143	2150
13.	NDR-8428-1-2	118	247	109	1150
14.	NDR-9539	116	387	117	2480
15.	HUR-SG-GR-32-875	117	297	141	1680
16.	HUR-ASG-KN-235	20	271	105	1630
17.	CR 2300	119	270	140	1580
18.	CR 2603	121	357	115	2450
19.	CR 2613-1-1-1-5-1	117	195	108	1270
20.	CR2615-1	115	211	92	1470
21.	CR 2613-1-5-2-5-1	119	207	132	1480
22.	Badshabhog	122	292	91	1650
23.	Kalonunia	118	185	102	1120
24.	Danagguri	123	292	142	2455

Exp. Mean= 1692. C.D. (0.05)= 450, C.V. (%)= 12.9

Conclusion

Farmers are discontinuing cultivation of traditional rice varieties because of the low yield. But present investigation clearly indicated that some of traditional rice varieties are still have potentiality to give higher yield in comparison with the elite varieties. Elite rice cultivars needs higher input for the requisite yield output. On the other hand traditional rice varieties needs lower input in comparison with the improved varieties. Therefore traditional rice cultivation would be the better choice for the marginal farmers for their sustainable agriculture.

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