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Short Communication

VARIABILITY IN MILLING AND COOKING QUALITY OF TRADITIONAL RICES FROM KORAPUT DISTRICT OF ORISSA, INDIA

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Twenty-five traditional rice genotypes were assessed to identify suitable lines having good milling and cooking qualities. On the basis of high percentage of polished rice (> 70%), head rice recovery (> 60%) and good cooking quality, five cultivars, two from short bold group (Malsundri and Rottadhan) two from long bold group (Gadakatha and Ratanchud) and one from slender group (Dubraj) were selected.

Key words : Rice, traditional varieties, milling, head rice, cooking quality

Marketability and profitability in rice business solely depend on its good milling and cooking qualities. Higher the total as well as whole rice recovery during milling more better will be the margin of profit. Therefore, rice breeders all over the world are in search of donors having good milling and cooking qualities along with yield attributes. The present study aims at identifying promising accessions for good milling and cooking qualities.

Twenty-five traditional rice cultivars collected from different parts of undivided Koraput district of Orissa were used for the present study. The area is considered as secondary centre of diversity for rice (Ramiah and Ghose, 1951). A systematic survey of the area known as Jeypore Botanical Survey yielded many valuable germplasm for utilisation as donors in breeding programmes. (Govindaswamy and Krishna Murty, 1959). For the purpose of identifying promising types having desirable attributes for cooking and milling characteristics, a set of twenty-five collected earlier from Koraput district were grown under similar conditions at Base Centre Farm during *Kharif* 1994. After harvesting and threshing, the samples were cleaned and then dried in the sun up to a moisture level of about 14% (W.B).

The shelling, polishing and head rice recovery percents were determined for 100 g samples in duplicate using laboratory milling machines of Satake, Japan make (Bal, 1974). The kernel length and breadth were determined by means of dial micrometer for ten milled kernels and then their average values were recorded (Govindaswamy and Ghosh, 1969). Standard method of cooking quality (Beachel and Stansel, 1963), expansion of volume and water uptake (Azeez and Shafi, 1966) and the alkali value was determined following the method of Little *et al.*. (1958).

A variety is commercially acceptable only when its total polished Rice (PR) as well as head rice recovery (HRR) during milling is maximum. From the present study, it was observed (Table 1) that the SB varieties yielded 62.5-72.2 per

Table 1. Milling and cooking quality of traditional rices of Koraput district, Orissa

Sl. No.	IC No.	Variety	BR %	HC%	PR%	HRR %	KL (nm)	KW (mm)	L/B	Shape	1000 grain wt. (g)	Kernel colour	Abdominal white	Alkali value	Kernel length after cooking	Elongation ratio	Water uptake	Volume expansion ratio
1	137542	Malsundri	78.42	21.58	72.20	61.55	4.25	2.50	1.70	SB	23.1	Red	Occ. P	3.0,2.0	7.26	1.71	295	37
2	137536	Chatianaki	78.12	21.82	71.87	36.29	4.40	2.00	2.20	SB	23.2	Red	Absent	3.0,2.0	7.56	1.72	220	4.0
3	137553	Bodidhan	68.68	31.32	62.51	21.44	4.95	2.20	2.25	SB	15.0	White	Absent	4.0,3.0	8.56	1.73	235	3.7
4	214897	Rottadhan	74.60	25.40	70.14	62.48	5.00	3.00	1.66	SB	24.5	White	Absent	4.0,3.0	8.75	1.75	220	3.7
5	265345	Mirladhan	75.08	24.92	68.74	33.42	5.35	2.25	2.37	SB	20.0	White	Absent	3.0,2.0	9.41	1.79	320	4.0
6	199329	Padadhan	73.38	26.62	67.54	56.42	5.38	2.42	2.22	SB	25.0	White	Absent	3.0,2.0	9.57	1.78	285	3.7
7	145635	Kendulkatti	76.70	23.30	69.04	37.30	5.60	2.90	1.93	SB	27.5	R+W	Absent	3.0,2.0	10.08	1.80	215	3.7
8	145636	Padmavati	76.46	23.54	68.70	51.10	5.65	2.30	2.45	SB	22.5	White	Absent	3.0,2.0	9.54	1.69	195	3.7
9	137532	Mundadhan	74.71	25.29	64.60	39.35	5.70	3.00	1.90	SB	22.5	Red	Absent	3.0,2.0	10.14	1.78	245	4.0
10	137540	Dhobakhudi	75.30	24.70	69.22	40.76	5.95	2.60	2.28	SB	24.5	White	Absent	3.0,2.0	9.52	1.60	195	3.7
11	145631	Sonakathi	75.10	24.90	68.10	45.50	6.00	2.65	2.26	LB	22.5	R+W	Absent	4.0,3.0	10.32	1.72	255	3.7
12	137538	Kharandi	72.80	27.20	64.04	35.64	6.00	2.70	2.22	LB	27.0	White	Occ.P	3.0,2.0	10.20	1.70	255	4.0
13	145814	Sebakdhan	74.50	25.50	68.12	51.57	6.04	2.75	2.20	LB	28.5	White	Absent	4.0,3.0	9.96	1.65	220	3.7
14	145640	Lokuti Munj	74.00	26.00	66.60	54.80	6.05	2.10	2.88	LB	18.0	White	Absent	3.0,2.0	10.28	1.70	205	4.0
15	135629	Muandhan	72.16	27.84	70.84	61.88	6.15	2.40	2.56	LB	24.0	White	Absent	4.0,3.0	10.70	1.74	280	3.7
16	145812	Gadakatha	76.22	23.78	70.84	61.88	6.15	2.40	2.56	LB	24.0	White	Absent	4.0,3.0	10.57	1.72	280	3.7
17	145634	Japanidhan	75.24	24.76	66.30	37.00	6.20	2.40	2.38	LB	28.0	Red	Absent	4.0,3.0	10.35	1.67	210	4.0
18	145639	Ratan chudi	84.53	15.42	79.26	62.43	6.20	2.60	2.58	LB	22.4	White	Absent	4.0,3.0	10.23	1.65	190	3.7
19	137531	Malgoindi	75.94	24.06	67.06	40.00	6.25	2.40	2.08	LB	31.0	Red	Absent	4.0,3.0	10.37	1.66	210	3.7
20	145628	Mohiphlidha	75.37	24.63	68.12	56.75	6.40	3.00	2.56	LB	25.0	Red	Absent	3.0,2.0	11.13	1.74	245	3.7
21	145638	Mahipal	77.06	22.94	67.70	27.52	6.42	2.50	2.56	LB	26.2	Red	Absent	3.0,2.0	10.20	1.59	190	3.7
22	137534	Karandi	74.10	25.90	64.48	37.04	6.45	2.80	2.30	LB	27.5	White	Absent	3.0,2.0	11.15	1.73	260	3.7
23	145632	Dhruvaraj	79.13	20.87	74.16	61.83	5.90	2.00	2.95	MS	18.2	White	ABsent	3.0,2.0	11.44	1.94	270	3.7
24	145811	Lachidhan	75.00	25.00	60.84	48.20	6.00	2.00	3.00	LS	21.0	White	Absent	4.0,2.0	10.20	1.70	255	4.0
25	145633	Machhakanta	75.50	24.50	70.10	20.58	6.25	2.00	3.12	LS	22.0	White	Absent	3.0,2.0	10.68	1.71	230	3.7

cent polished rice, whereas the long bold and slender groups produced 60.6-79.26 per cent and 66.84-74.16 per cent. The mean values of plished rice for the above three groups of rice varieties are 68.45, 67.60 and 70.37 per cent respectively. The head rice recovery of SB group was observed to be in the range of 33.42-62.48 per cent, whereas the LB and slender groups produced 23.44-62.43 per cent and 20.58-61.83 per cent. The mean values of HRR for the above three groups of rice varieties are 44.01, 44.46 and 43.53 per cent respectively.

There was little variation in the mean values of PR and HRR among the three groups of rice varieties. However, in each groups, variability could be noticed among different varieties in respect of PR and HRR. High coefficient of variation was observed among medium slender varieties (48.26%) followed by short bold (29.90%) and long bold (29.35%). This suggests that there exists a great scope to select varieties with best combinations of PR and HRR (%) which can be used as donor in the breeding programme. The findings on husk content (HC) and 1000 grain weight in the present study did not reflect any specific effect on either PR or HRR (%).

The cooking and kernel characteristics indicated that kernel characteristics are either red or white or both in some cases. Abdominal white absent in 23 varieties and present only in two varieties. Variation was also observed with respect to alkali value (2.0-4.0), elongation ratio (1.70-1.94), water uptake (1.90-3.20) and volume expansion (3.7-4.0) These characteristics are also important from consumers preference point of view. In the present study, these quality characters did not vary much among the genotypes and remained within the permissible limits.

The results of the present investigation revealed that five cultivars, two from the SB group (Malsundri and Rottadhan), two from the LB group (Gadakatha and Ratanchudi) and one from the slender group (Druvaj) exhibited high percentage of PR (> 70%) and HRR (> 60%) along with good cooking quality. Therefore, these five traditional rice cultivars could be used by the breeders as donors for breeding varieties with an aim to achieve higher milling and head rice recovery along with good cooking quality.

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