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QUALITY CHARACTERISTICS OF SOME SCENTED RICE

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Some scented rice genotypes were evaluated for their quality characteristics. The study revealed that Milagrosa, Gopalbhog, Begami 2-8, Gourab and Type-3 are good donors for good kernel length with some other desired quality characteristics. It is possible to produce long slender scented rice with desired quality characteristics by hybridization or by pyrimiding of genes from the above varieties.

Key words : Scented rice, cooking characters, quality characters

Scented rice has a premium value in international market but they are very poor yielders. They are praised in the market due to their quality characteristics. The present investigation was undertaken to identify the varieties with good quality, long, slender and good elongation after cooking for export purpose. So to sustain export potential of scented rice, care should be taken to produce exclusive rice varieties that would be broadly conform to consumers quality demand of major importing units.

MATERIALS AND METHODS

Twenty scented rice varieties collected from different parts of India were evaluated at Central Rice Research Institute, Cuttack for their quality characteristics. Thirty days old seedlings were transplanted in a randomised block design with 3 replications. Recommended package of practices were followed to raise normal cross. The quality characters were analysed for hulling, milling, head rice recovery percentage as described by Ghosh *etal.* (1971), kernel length and breadth measured by dial micrometer and L/B ratio was calculated. For alkali spreading value method of Little *et al.* (1958), water uptake and volume expansion (Beachell and Stansel, 1963), cooked kernel length was recorded using a graph paper and elongation ratio by the method adopted by Azeez and Shafi (1966) and for amylose by Juliano (1971) methods were followed.

Export quality scented rice mainly depends upon head rice recovery and grain shape and size. The hulling and milling percentage depends upon endosperm characteristics (Govindaswamy and Ghosh, 1969). The variability in grain filling influence the head rice recovery because the starch which are packed in endosperm may loose or tight which affects head rice recovery. Among the different varieties (Table 1) Basanbhog, Kalajira, Katrani and Gopalbhog have head rice recovery more than 60 per cent and BAM-3, IET 8579, Dubraj, Milagrosa, Bankura, Chinisakkar, Hansraj, Gourab, Type-3, Gopalbhog, Begami-2-8 and Rajbhog are long slender kernels having length > 6mm and L/B ratio > 3.

RESULTS AND DISCUSSION

With regards to alkali spreading value, the extent of swelling or digestion of rice kernel in a given alkali solution indicates the spreading after cooking. The alkali spreading value is also affected

Table 1. Quality characters in scented rice

	Hulling (%)	Milling (%)	Head rice recovery (%)	Kernel length (mm)	Kernel length/ breadth ratio	Alkali spreading value	Water uptake	Cooked kernel length (mm)	Elongation ratio	Volume expansion	Amylose content	Grain yield/ plant(g)
BAM-3	60.60	55.25	35.70	6.60	4.06	2.50	260.00	11.10	1.68	3.82	23.47	4.02
Basnabhog	73.00	67.20	61.05	4.51	2.82	3.25	170.00	8.50	1.88	4.07	18.24	8.23
IET-8579	71.90	64.25	47.10	6.41	4.16	4.50	320.00	10.70	1.67	3.75	18.44	7.72
Kalajira	75.90	71.45	65.15	4.50	2.62	2.75	197.50	7.50	1.66	3.75	21.26	5.20
Katrani	74.25	69.20	61.10	5.82	3.57	3.25	195.00	8.70	1.50	3.82	21.23	7.44
Dubraj	72.25	66.25	53.36	6.18	3.89	4.25	225.00	10.50	1.70	4.29	23.30	7.76
Milagrosa	63.25	58.30	44.45	7.27	4.65	4.00	205.00	10.70	1.47	3.94	21.53	3.33
Kalimochi	70.60	63.96	52.90	5.91	3.64	3.75	245.00	9.70	1.64	3.76	21.23	7.15
Muskubhi	72.15	65.75	55.00	5.59	2.99	2.75	232.50	8.40	1.50	4.43	19.38	7.79
Tulsibhog	80.65	75.40	69.10	5.89	3.89	4.00	205.00	8.50	1.44	4.02	24.29	10.70
Seetasail	77.15	71.60	54.00	5.97	3.89	3.75	220.00	9.10	1.52	4.07	25.33	12.35
Bankura	70.40	65.25	58.80	6.47	3.85	3.00	270.00	9.10	1.40	3.69	20.06	5.90
Chinisakkar	69.25	63.25	48.60	7.53	4.66	3.50	197.50	11.10	1.48	3.94	23.06	5.72
Gopalbhog	80.75	75.36	63.65	6.65	3.88	4.25	255.00	10.45	1.57	2.95	20.26	7.78
Begani-2-8	75.05	68.80	55.10	7.12	4.26	3.50	242.50	12.30	1.73	4.23	19.40	6.59
Hansraj	73.05	67.95	56.05	7.70	4.71	2.50	145.00	9.30	1.21	3.86	23.80	4.45
Gourab	67.00	59.80	46.95	7.29	4.59	4.25	282.50	11.70	1.61	3.38	17.28	9.00
Type-3	61.00	56.10	43.65	8.09	4.98	2.75	300.00	13.35	1.65	3.78	20.28	5.14
Rajbhog	70.65	65.00	53.15	6.35	4.08	2.50	245.00	10.50	1.65	4.14	19.55	5.00
Laxmibilash	75.55	69.85	59.65	5.09	3.07	3.00	190.00	7.45	1.47	3.66	22.79	4.00

by the ratio of amylose and amylopectine. If the kernel splits more, means the rice will be waxy after cooking and if it splits little, the rice will be non-waxy. The people of Japan and Vietnam prefer waxy rice whereas others prefer non-waxy rice. In the present study the value ranged from 2-4, which are low to medium. The intermediate value 4-5 are (IET 8579, Dubraj, Gopalbhog and Gaurab) preferred as good quality rice because the kernel become soft during eating and these varieties may be used as good donors for this character.

For water uptake BAM-3, IET 8579, Bankura, Gopalbhog, Gaurab, Type-3 and for volume expansion all the varieties except Gopalbhog are excellent. The elongation ratio ranged from 1.4 to 2.0 which indicates their good linear expansion after cooking. The endosperm of kernel is composed of starch, which is a fraction of amylose and amylopectine. The amylose content of non-waxy rice ranged from 8-37 per cent of total starch whereas glutaneous or waxy rice have practically no amylose (Webb and Starmar, 1972). The amylose content of twenty varieties ranged from 17-24 per cent. Milarosa, Kalimochi, Bankura, Gopalbhog, Begami 2-8, Type-3, Rajbhog, and Laxmibilash are good for amylose content.

The results of present investigation revealed that Milagrosa, Gopalbhog, Begami 2-8, Gourab and Type 3 having most of the key traits for quality which are preferred by the consumers in

Table 2. Best donors for different quality characters

1.	Hulling (%)	Kalajira, Tulasibhog, Seetasail, Gopalbhog, Laxmibilash
2.	Milling (%)	Kalajira, Katrani, Tulasibhog, Seetasail, Gopalbhog, Laxmibilash
3.	Head rice recovery (%)	Basnabhog, Kalajira, Katrani, Gopalbhog, Laxmibilash
4.	Kernel length	Milagrosa, Chnisakkar, Begami 2-8, Hansaraj, Gourab, Type-3
5	Kernel length/breadth ratio	Milagrosa, Chinisakkar, Hansaraj, Gourab, Type-3
6	Alkali spreading value	IET-8579, Dubaraj, Milagrosa, Tulasimanjari, Gopalbhog, Gourab
7	Water uptake	BAM-3, IET 8579, Bankura, Gourab, Type-3
8	Cooked kernel length	BAM-3, IET 8579, Milagrosa, Chinisakar, Begami2-8, Gourab, Type-3
9	Elongation ratio	BAM-3, Basnabhog, Dubraj, Begami 2-8, IET 8579
10	Volume expansion	Basanbhog, Dubaraj, Muskbudhi, Seetasail, Begami 2-8, Rajbhog
11	Amylose content	Milagrosa, Kalimochi, Bankura, Begami 2-8, Type-3, Rajbhog

India and abroad. Gene manipulation followed by multiple selection criteria will help in quick realization of better selections for export purpose. The above five varieties may be utilized as donors in the hybridization programme in the improvement of scented rice.

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