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Quality Evaluation of Various Rice (Oryza Sativa L.) Varieties

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ABSTRACT

Oryza sativa L. Known as Rice is one of the most established homegrown an accessible plant (crop) species that has had the option to take care of more individuals across the globe looks at to any remaining food crops. Being the most people mainland. Asia is liable for greater part of the rice creation across the world. Oryza sativa represents around 104 of complete yield developed region in Pakistan representing 6.1 percent of absolute horticulture worth and 3 percent of GDP (total national output). The examples of rice were ready by utilized processing. The actual nature of the rice cultivars was determined utilizing micrometer by computing length expansiveness, thickness, LUI proportion and quality record. After actual examination the examples were cooked and handled for the computation of dampness, debris, salt spreading, gel, consistency and rice rolls. The nutrient C and sugar levels of the rice cultivars tests not really set in stone. A length micrometer was utilized to decide the length of the rice types. Among the tried rice assortments GQTL-17 was kept to have most noteworthy length 6.69mm while that GQTL not set in stone to have the least length that is 5.63mm. The retaliate for Length for every one of the chose 50 cultivars was determined to be 6.12mm. Additionally the broadness not set in stone for the chose assortments, among which GQTL-32 was found to have most noteworthy expansiveness of 245mm while least still up in the air for GQTL-1.80. The normal not really set in stone to be 2.Imm for every one of the chose tests. The chose 50 varieties of rice tests were oppressed for estimation of thickness where GQTL-i8 &GQTL-36 were having most elevated thickness of 1.86mm while that of GQTL-12 with 1.5S mm was the least among the rice tests. Also, the normal thickness determined for all the chosen rice samples was 1.74mm. The chose rice sample were then oppressed for assurance of length expansiveness (L/B) proportion among which GQTL-13 cultivar was determined toe the most elevated (3.50mm) while that of GQTL-2 (24Amm) was the least. The normal LB proportion was computed to be 2.85mm. The quality record of the rice cultivars was determined among which GQTL-13 (2.1 l mm) was having greatest list esteem while that GQTL-32 (1.36). The normal quality list of all the rice tests was assessed to 1.64mm. The still up in the air in chosen four rice tests were 10%-12%. Among the chose breed GQTL-1368 (1R1) were found to have most elevated dampness content 12.66° followed by GQTL-1368 (IR2) having 12.186. The least dampness content was confinement for GQTL-1368 (43) (URI) that is 10.70%. The debris content of the rice cultivars was determined to be 0.33.

INTRODUCTION

Rice has long been one of the world's most important staple foods. Consumer preferences differ by region; for example, the Japanese prefer sticky rice (Deshpande & Bhattacharya, 1982), whereas the Italians prefer Baldo and Arborio rice's, which have a high amylopectin content and are short grain varieties, releasing starch during cooking to produce a creamy and smooth risotto. Americans prefer a semi-milled long grain rice or even brown rice, but Asian cuisine favors spicy and fragrant Basmati/Jasmine rice, and Indians like a well-milled white rice (Lyon et al., 1999).A blend of brown, white, and red Indica rice, as well as wild rice from the Zizania species. Rice is the seed of the Oryza sativa (Asian rice) or Oryza Gaberial grass species (African rice). It is the most extensively consumed cereal grain by a substantial portion of the world's human population, particularly in Asia. After sugarcane (1.9 billion tonnes) and maize (741.5 million tonnes), it is the agricultural commodity with the third-highest global production (rice, 741.5 million tonnes in 2014). (1.0 billion tons). Since there is a sizeable. Other than human consumption, portions of sugarcane and maize crops are utilized. Rice is a type of grain. The most significant grain in terms of human nutrition and caloric consumption, accounting for more than one-fifth of all calories consumed of all calories consumed by humans on the planet Rice comes in a variety of shapes and sizes, as well as culinary uses. Regional preferences are common. Rice comes in a variety of shapes, hues, and sizes.Rice is a monocot that is usually grown as an annual plant, but it can survive as a perennial in tropical areas and produce a ratio on crop for up to 30 years. [3] Rice farming is best suited to countries and locations with cheap labor costs and plenty of rain. Because it is time consuming to grow and takes a lot of water Rice, on the other hand, can be cultivated almost anywhere, including on a steep slope or mountain with the use of water-controlling terrace systems. Despite the fact that its parent species are native to Asia and portions of Africa, centuries of trade and export have made it a part of many cultures around the world.The rice plant Oryza sativa is sometimes known as Asian rice. Rice is traditionally grown by flooding the fields before or after planting the young seedlings. This basic method necessitates careful planning and maintenance of the water damming and channelling, but it inhibits the growth of weaker weeds and pest plants that do not have a submerged growth condition, as well as vermin.While floods is not required for rice farming, all other irrigation techniques necessitate a greater effort in weed and insect control during growth seasons, as well as a different 18 approach to soil fertilisation. The term "wild rice" is mainly applied to wild and domesticated species of the genera Zizania and Porteresia, though it can also refer to primitive or uncultivated Oryza variants.Rice is an angiosperm that is monocotyledonous. It belongs to the Oryza genus, which has more than 20 species, only two of which are considered cultivated rice: Oryza sativa, Oryza sativa, Oryza sativa (Watanabe, 1997) Oryza glaberrima is grown in West Africa, while Oryza glaberrima is grown in Southeast Asian countries and Japan. Rice was first farmed in tropical Asia, with the earliest evidence reaching back to 5000 BC, although it was later spread to temperate areas (Watanabe, 1997). In Asia, rice is the most essential staple meal. More than 90% of the world's rice is cultivated and consumed in Asia, which is home to 60% of the global population. Rice accounts for 35-60% of the caloric intake of Asia's three billion people (Guyer et al., 1998).Rice is planted on approximately 150 million hectares per year, accounting for around 10% of the world's arable land. This amounted to 600 million tons of rice seed, or 386 million tons of milled rice, in 1999/2000. Global rice demand is expected to rise to almost 765 million tons, or 533 million tonnes of milled rice, by 2030, as the world population grows from 6.2 billion in 2000 to around 8.2 billion in 2030. (FAO, 2002). Rice yields have grown at a steady rate of about 2.5 percent each year for nearly three decades, since the Green Revolution.However, by the 1990s, this had dropped to just 1.1 percent (Riveros and Figures, 2000). Efforts to surpass the rice yield limit through increasing yield, insect and disease resistance, and adaptability to a variety of growing situations. Breeding programmes and the production of hybrid rice varieties have been the focus. Since 1974, China has produced hybrid rice, which is presently grown in over 40% of the country's rice fields (Fujimaki and Matsuba, 1997; Sasaki, 1997; IRRI, 1999).

RESULT AND DISCUSSION

Milling of Rice Variety weight GQTL 1455 (05, 06, 07, 08)

Table 1

Sample	Paddy	Brown	Milled	Head
1455 (5)	986	706	590	544
1455(6)	880	686	568	514
1455 (7)	1004	732	608	568
1455 (8)	980	738	634	608

Moisture of different rice variety 1455(05, 06, 07, 08)

Table 2

Sample	Grain Moisture Meter	Digital Grain Moisture Tester
1455(5)	14.1	12.2
1455(6)	13.5	12
1455(7)	13.5	12.6
1455(8)	13.6	13.2

Physical quality analysis of GQTL 1455(05)

Table (1)

Replicatio	length	Breadth	L/B	Thickness	Quality index
R1	6.86	1.75	3.92	1.57	2.496815
	6.7	1.85	3.621622	1.67	2.168636
	6.09	1.96	3.107143	1.62	1.917989
	6.35	1.68	3.779762	1.63	2.318872
	6.99	1.68	4.160714	1.6	2.600446
Mean	**6.598**	**1.784**	**3.717848**	**1.618**	**2.300552**
R2	6.86	1.89	3.62963	1.67	2.173431
	6.27	1.96	3.19898	1.61	1.986944
	6.35	1.93	3.290155	1.5	2.193437
	6.33	1.93	3.279793	1.63	2.012143
	6.15	1.67	3.682635	1.4	2.630453
Mean	**6.392**	**1.876**	**3.416238**	**1.562**	**2.199282**
R3	6.28	1.75	3.588571	1.59	2.256963
	6.41	1.84	3.483696	1.62	2.150429
	6.68	1.9	3.515789	1.62	2.17024
	6.5	1.87	3.475936	1.58	2.199959
	5.87	1.88	3.12234	1.52	2.054171
Mean	**6.348**	**1.848**	**3.437267**	**1.586**	**2.166353**

GQTL 1455(06)

Table (2)

Replication	length	breadth	L/B	Thickness	quality index
R1	6.14	1.81	3.392265	1.65	2.055918
	6.25	1.77	3.531073	1.59	2.220801
	6.4	1.82	3.516484	1.55	2.268699
	6.17	1.85	3.335135	1.57	2.12429
	6.52	1.86	3.505376	1.59	2.204639
Mean	**6.296**	**1.822**	**3.45607**	**1.59**	**2.17487**
R2	6.5	1.81	3.59116	1.61	2.230534
	6.42	1.97	3.258883	1.61	2.024151
	6.98	1.86	3.752688	1.64	2.288224
	6.54	1.75	3.737143	1.61	2.321207
	6.49	1.71	3.795322	1.56	2.432898
Mean	**6.586**	**1.82**	**3.62704**	**1.606**	**2.2594**
R3	6.77	1.81	3.740331	1.64	2.28069
	7.24	1.9	3.810526	1.64	2.323492
	7.01	1.96	3.576531	1.59	2.24939
	6.45	1.88	3.430851	1.65	2.079304
	6.82	1.82	3.747253	1.62	2.313119
Mean	**6.858**	**1.874**	**3.6611**	**1.628**	**2.2492**

QTL1455 (07)

Table (3)

Replicatio	length	breadth	L/B	thickness	quality index
R1	6.62	1.86	3.55914	1.7	2.093612
	6.46	1.84	3.51087	1.63	2.153908
	6.54	1.82	3.593407	1.61	2.23193
	6.96	1.84	3.782609	1.66	2.27868
	6.46	1.83	3.530055	1.7	2.076503
Mean	**6.608**	**1.838**	**3.59522**	**1.66**	**2.16693**
R2	6.59	1.84	3.581522	1.62	2.210816
	6.79	1.84	3.690217	1.66	2.223023
	6.65	1.73	3.843931	1.67	2.301755
	6.62	1.8	3.677778	1.69	2.1762
	7.01	1.78	3.938202	1.69	2.330297
Mean	**6.732**	**1.798**	**3.74633**	**1.666**	**2.24842**
R3	6.92	1.94	3.56701	1.61	2.215534
	6.85	1.86	3.682796	1.62	2.273331
	6.57	1.93	3.404145	1.59	2.140972
	7.01	1.88	3.728723	1.6	2.330452
	6.85	1.97	3.477157	1.67	2.08213
Mean	**6.84**	**1.916**	**3.57197**	**1.618**	**2.20848**

GQTL 1455(08)

Table (4)

Replicatio	length	breadth	L/B	Thickness	quality index
R1	6.74	1.84	3.663043	1.69	2.167481
	6.92	2.08	3.326923	1.75	1.901099
	7.04	1.94	3.628866	1.64	2.212723
	6.64	1.96	3.387755	1.75	1.93586
	6.52	1.92	3.395833	1.72	1.974322
Mean	**6.772**	**1.948**	**3.48048**	**1.71**	**2.0383**
R2	7.04	1.92	3.666667	1.67	2.195609
	6.64	1.89	3.513228	1.69	2.078833
	6.81	2.01	3.38806	1.78	1.903404
	6.69	2.02	3.311881	1.84	1.799935
	6.63	2.01	3.298507	1.74	1.895694
Mean	**6.762**	**1.97**	**3.43567**	**1.744**	**1.9747**
R3	7.23	1.99	3.633166	1.76	2.064299
	6.78	2.11	3.21327	1.66	1.935705
	6.86	1.99	3.447236	1.77	1.947591
	6.83	1.96	3.484694	1.68	2.074223
	7.02	1.91	3.675393	1.68	2.187734
Mean	**6.944**	**1.992**	**3.49075**	**1.71**	**2.04191**

Alkali Spreading

Table 1

Score	Spreading	Alkali Digestion	Gelatinized Temp
01	Kernel not affected	Low	High
02	Kernel swallowed	Low or Intermediate	High
03	Kernel swallowed collar complete or narrow		High or Intermediate
04	Kernel swallowed collar complete or narrow and wide		Intermediate
05	Kernel split or segmented		Intermediate
06	Kernel dispersed, merging with roller	High	Low
07	Kernel completely dispersed and intermingled	High	Low

GQTL: CODE 1455 (05) A

01	Kernel not affected	Low	High

GQTL: CODE 1455 (06) B

06	Kernel dispersed, merging with roller	High	Low

Bursting of Rice Analysis of different rice varieties

Table 4

Variety	Sample (grains)	Sound rice	Bursting rice	Ratio %
1455(05)	50	46	4	92%
1455(06)	50	48	2	96%
1455 (07)	50	46	4	92%
14455(08)	50	44	6	88%

1455(5)	1455(6)
Empty Petri Dish = 38.3486g Sample = 0.6097g Soaking time = 20mins Distilled Water =10ml 15min cooked at 100 ̊C After Cooking Wt. = 40.8890g W.A.R = 4.1666 Curling = 2% Bursting = 4% Volume Expansion = 9.2mm Aroma = low Stickiness = 2/5	Empty Petri Dish = 38.3295g Sample = 0.7668g Soaking time = 20mins Distilled Water =10ml 15min cooked at 100 ̊C After Cooking Wt. = 40.9135g W.A.R = 3.3698 Curling = 4% Bursting = 2% Volume Expansion = 8.6mm Aroma = low Stickiness = 2/5

Bursting of Rice Analysis of different rice varieties

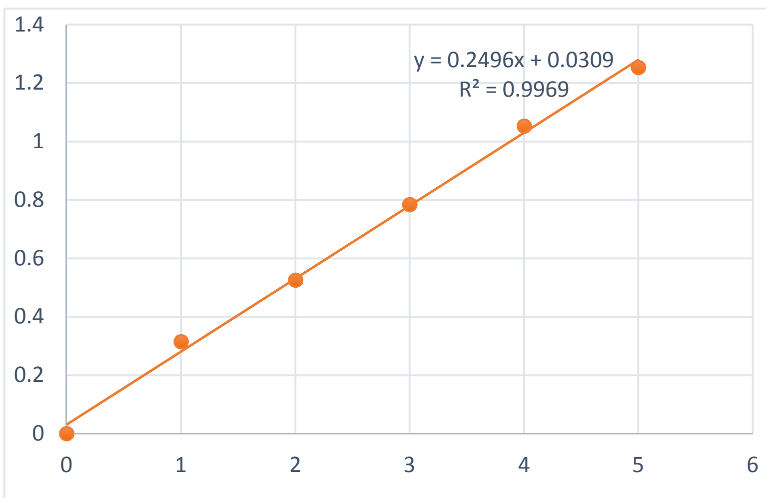
Table 4 (b)

1455(7)	1455(8)
Empty Petri Dish = 53.0119g	Empty Petri Dish = 57.2863g
Sample = 0.7318g	Sample = 0.8868g
Soaking time = 20mins	Soaking time = 20mins
Distilled Water =10ml	Distilled Water =20ml
15min cooked at 100 ͦC	15min cooked at 100 ͦC
After Cooking Wt. = 55.7577g	After Cooking Wt. = 60.3725g
W.A.R = 3.7521	W.A.R = 3.4801
Curling = 4%	Curling = 4%
Bursting = 4%	Bursting = 6%
Volume Expansion = 9.1mm	Volume Expansion = 8.9mm
Aroma = low	Aroma = normal
Stickiness = 3/5	Stickiness = 3/5

Amylose Content of Rice Varieties

Table 5

Amylose		
Amylose Standard	**0**	**0**
	1	0.315
	2	0.525
	3	0.784
	4	1.052
	5	1.253



Equation	Y = x-0.0309/0.2496

Reading From Spectophotometer					
Sample		**Reading From Spectophotometer**	**Value from Equation**	**Dilution Factor 20**	**Average**
5	**R1**	0.408	1.5108	30.216	**29.936**
	R2	0.401	1.4828	29.655	
6	**R1**	0.397	1.4667	29.335	**29.535**
	R2	0.402	1.4868	29.736	
7	**R1**	0.388	1.4307	28.614	**28.814**
	R2	0.393	1.4507	29.014	
8	**R1**	0.512	1.9275	38.550	**38.710**
	R2	0.458	1.7111	34.223	

Aroma Estimation of Rice Varieties

Table 7

Sample	Amount of sample	Aroma
1455(05)	0.6097g	low
1455 (06)	0.7668g	low
1455 (07)	0.7318g	low
1455 (08)	0.8868g	normal

Ash of Different Rice Varieties

Table 8

Sample 1455 (05)	**Sample 1455 (06)**
Initial weight= 20.2492 Sample= 3.0596 Final weight=20.2577 Result= 0.2778	Initial weight= 20.8394 Sample= 3.0396 Final weight= 20.8506 Result= 0.4342
Sample 1455 (07)	**Sample 1455 (08)**
Initial weight= 21.61200 Sample= 3.2146 Final weight= 21.6274 Result= 0.4790	Initial weight= 21.1854 Sample= 3.0521 Final weight= 21.1933 Result= 0.2588

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