On Distribution and Grain Morphology of Cultivated Rice Collected in Tanzania, 1988

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Introduction

During the period from July to August in 1988, the writers took a trip to Tanzania for collecting the wild and cultivated rices under the project, "Studies on the Distribution and Ecotypic Differentiation of Wild and Cultivated Rice Species in Africa", supported by a Grant from the Ministry of Education, Science and Culture of the Japanese Government.

On the distribution of the cultivated rice in Tanzania, some reports have already been published[1]. In this trip, various types of cultivated rice, distributed and under cultivation, were collected in Tanzania. In present report, only the habitat and record of some morphological characters of husked grains of the cultivated rice collected in Tanzania were described. Based on the analyses of the data obtained in the further morphological characters, varieral variations are going to be informed in the following papers.

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Abstract of distribution and habitat of cultivated rice

Geographical distribution and habitats of the cultivated rice collected in Tanzania were briefly illustrated in Fig.1, in which are given the tripping-routes and collection sites, too.

Seed samples were collected in the following districts; Ifakara, Mbeya, Ivuna, Kyela, Chimala, Iringa, Dodoma, Singida, Nzega, Ujiji, Biharamulo, Mwanza, Bunda,

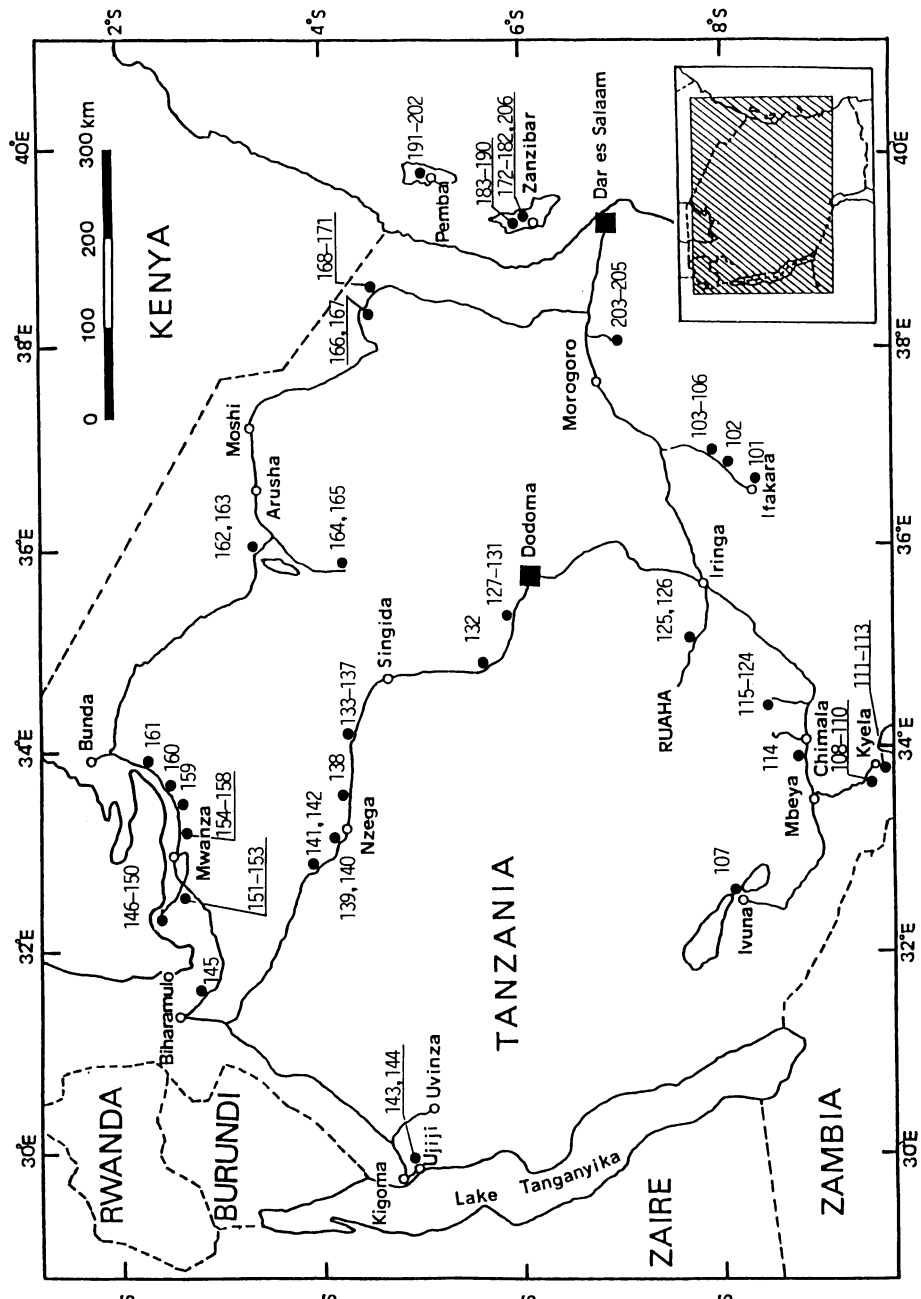

Fig. 1. Map showing several localities where the cultivated rices were collected in Tanzania. Solid line; routes of observations, filled circles; collection areas, open circles; main towns. Code-numbers used in the figure are corresponding to the strain number used in the table.

Table 1. Distribution and habitat of cultivated rice collected in Tanzania in 1988

Strain No.	Collecting date	Local name	Place, habitat and remarks
101	Jul. 5	India Rangi	Ifakara. Irrigated paddy field.
102	Jul. 5	Limoto	Mkula Village, Ifakara. Collected from farmers' store.
103	Jul. 5	India	Sanje Village, Ifakara. Collected from farmers' store.
104	Jul. 5	Kisaki	The same place as No.103.
105	Jul. 5	Arusha	The same place as No.103.
106	Jul. 5	Afaa	The same place as No.103.
107	Jul. 7	Kilombero	Nkanga Village, Ivuna. Collected from farmers' store.
108	Jul. 8	Mwangle	Mafiga Village, Kyela. Collected from farmers' store. Cultivated by upland condition.
109	Jul. 8	Mwasungo	The same place as No.108.
110	Jul. 8	Kilombero	The same place as No.108.
111	Jul. 8	Supa	Kyela. Collected from farmers' store.
112	Jul. 8	Kilombero	The same place as No.111.
113	Jul. 8	Supa Mwasungo	The same place as No.111.
114	Jul. 9	Kilombero	Usangu Village, Igurusi. Collected from farmers' store.
115	Jul. 9	Kibibi	Mbalari, NAFCO station. Collected from JICA men's collections.
116	Jul. 9	Kilombero	The same place as No.115.
117	Jul. 9	Taiwan	The same place as No.115.
118	Jul. 9	Kihogo	The same place as No.115.
119	Jul. 9	Afaa Mwanza	The same place as No.115.
120	Jul. 9	Selemwa	The same place as No.115.
121	Jul. 9	Shindano	The same place as No.115.
122	Jul. 9	India	The same place as No.115.
123	Jul. 9	Kula Na Bwana	The same place as No.115.
124	Jul. 9	Cola (?) (Unknown)	The same place as No.115.
125	Jul. 10	Supa	Ruaha, Nyangano. Irrigated paddy field.
126	Jul. 10	Ngohi	The same habitat as No.125.
127	Jul. 13	Supa	Bahi Village, Dodoma. Irrigated paddy field.
128	Jul. 13	Supa	The same habitat as No.127.
129	Jul. 13	Supa	The same habitat as No.127.
130	Jul. 13	Kihogo	The same habitat as No.127.
131	Jul. 13	Kihogo	The same habitat as No.127.
132	Jul. 13	-Unknown- (Supa?)	Kikuyu, Singida. Irrigated paddy field.
133	Jul. 14	-Unknown-	Yaragana Village, Nzega. Irrigated paddy field.
134	Jul. 14	-Unknown-	The same habitat as No.133.
135	Jul. 14	-Unknown-	The same habitat as No.133.
136	Jul. 14	-Unknown-	The same habitat as No.133.
137	Jul. 14	-Unknown-	The same habitat as No.133.
138	Jul. 15	Supa	Nyandekwa Village, Nzega. Collected from farmers' store.
139	Jul. 15	Supa	Itaba Village, Nzega. Irrigated paddy field.
140	Jul. 15	Kihogo	The same habitat as No.139.
141	Jul. 15	Supa	Kahama. Irrigated paddy field.
142	Jul. 15	Kihogo	The same habitat as No.141.
143	Jul. 17	Supa	Ujiji. Irrigated paddy field at the fringe of Lake Tanganyika.

144	Jul. 17	Supa	The same place as No.143. Collected from farmers' store.
145	Jul. 21	Horonadi	Ikora Village, Biharamulo. Irrigated paddy field.
146	Jul. 22	-Unknown- (Supa?)	Kachua Village, Mwanza. Irrigated paddy field. Mixed variety.
147	Jul. 22	Moshi	The same habitat as No.146.
148	Jul. 22	Supa	Chamabanda Village, Mwanza. Irrigated paddy field. Mixed variety.
149	Jul. 22	Faya	The same habitat as No.148.
150	Jul. 22	Kihogo	The same habitat as No.148.
151	Jul. 22	Supa	Sengerema Town. Collected from farmers' store.
152	Jul. 22	Kihogo	The same place as No.151.
153	Jul. 22	Sindano	The same place as No.151.
154	Jul. 23	Supa	Kisesa Village, Mwanza. Collected from farmers' store.
155	Jul. 23	-Unknown- (Mixture)	The same place as No.154.
156	Jul. 23	Senga Senga	The same place as No.154.
157	Jul. 23	Moshi	The same place as No.154.
158	Jul. 23	-Unknown-	The same place as No.154.
159	Jul. 23	Lukata Kihogo	Rugei Village, Mwanza. Collected from farmers' store.
160	Jul. 23	-Unknown-	Ilungu Village, Mwanza. Irrigated paddy field at the fringe of Lake Victoria.
161	Jul. 23	-Mixture-	Mwagulanja Village, Mwanza. Collected from farmers' store. Mixed variety.
162	Jul. 25	Supa	Mto-Wa-Mbu Town, Arusha. Collected from farmers' store.
163	Jul. 25	Moshi (Sigara)	The same place as No.162.
164	Jul. 25	Moshi (Sigara)	Mogugu Village, Arusha. Collected from farmers' store.
165	Jul. 25	Supa	The same place as No.164.
166	Jul. 28	Supa	Ganja Village, Same. Collected from farmers' store.
167	Jul. 28	-Mixture-	The same place as No.166. Mixed variety.
168	Jul. 28	Semanini	Kihurio Village, Same. Collected from farmers' store. Mixed variety.
169	Jul. 28	Kihogo	The same place as No.168.
170	Jul. 28	Supa	The same place as No.168.
171	Jul. 28	Wahi Wahi	The same place as No.168.
172	Aug. 1	-Unknown-	Mtwango Village, ZANZIBAR. Irrigated paddy field of the experimental station.
173	Aug. 1	Pinlot-330	The same habitat as No.172.
174	Aug. 1	Colombia-5179	The same habitat as No.172.
175	Aug. 1	Supa	Kilombero Village, ZANZIBAR. Collected from farmers' store. Mixed variety.
176	Aug. 1	-Unknown-	The same place as No.175.
177	Aug. 1	-Unknown-	The same place as No.175.
178	Aug. 1	Kijicho	Upenja Village, ZANZIBAR. Mixed-growing in rain-fed paddy field.
179	Aug. 1	Moshi	The same habitat as No.178. Mixed variety.
180	Aug. 1	Wamba	The same place as No.178. Collected from farmers' store. Mixed variety.
181	Aug. 1	-Unknown-	The same place as No.180. Irrigated paddy field.
182	Aug. 1	-Unknown-	The same habitat as No.181.
183	Aug. 2	-Mixture-	Donge Mwanda Village, ZANZIBAR. Collected from farmers' store. Mixed variety.

184	Aug. 2	Supa	The same place as No.183.
185	Aug. 2	Gamti	The same place as No.183. Mixed variety.
186	Aug. 2	Mkia Wa Ngawa	The same place as No.183.
187	Aug. 2	Singapuri	The same place as No.183.
188	Aug. 2	Ringa	The same place as No.183.
189	Aug. 2	Tarabizuna	The same place as No.183. Mixed variety.
190	Aug. 2	Ringa	Mahonda Village, ZANZIBAR. Rain-fed paddy field. Mixed variety.
191	Aug. 4	Ringa	Kibirinzi Village, PEMBA. Irrigated paddy field. Mixed variety.
192	Aug. 4	Afaa	The same habitat as No.191.
193	Aug. 4	Kivuli	The same habitat as No.191. Mixed variety.
194	Aug. 4	Riziki	The same habitat as No.191.
195	Aug. 4	Kibawa	The same habitat as No.191.
196	Aug. 4	Ausbin	The same habitat as No.191.
197	Aug. 4	Afaa	Ole Exp. Sta., PEMBA. Collected from the experimental stocks. Mixed variety.
198	Aug. 4	Tiwani	The same place as No.197. Rain-fed paddy rice field.
199	Aug. 4	Zira	The same habitat as No.198. Mixed variety.
200	Aug. 4	Malbora	The same habitat as No.198. Mixed variety.
201	Aug. 4	Kivuli	The same habitat as No.198.
202	Aug. 4	Supa	The same habitat as No.198.
203	Aug. 5	Mkia Wa Nyumba	Ruvu, NAFCO Experimental Station. Irrigated rice field. Mixed variety.
204	Aug. 5	Supa	The same habitat as No.203.
205	Aug. 5	Kula Na Bwana	The same place as No.203. Delivered from the officer of NAFCO.
206	Aug. 1	*O. glaberrima*	Upenja Village, ZANZIBAR. Mixed growing with *O. sativa* cultivars at the rain-fed paddy field of the Experimental Station. Mixed variety.

Arusha, Same, Ruvu, Zanzibar and Pemba. Distribution of the cultivated rice collected was given in Table 1. In this table, the strain number, the date of collection, the local name and some informations for the habitat were described.

One hundred and twenty one strains of 106 seed samples were collected during the trip, including two strains of a seed samples of *O. glaberrima*. At that time, cultivated rice had been harvested from most of the fields. Seventy seven strains of 105 seed samples of *O. sativa* cultivars were gathered from farmers' stores, as well as from threshing floors and unthreshing panicles piled to dry. Almost all of those were ascertained to be mixed varieties. The other seed-samples were collected from the paddy fields of the dry-season-cropping found in the irrigated paddy fields, in the swampy low lands adjacent to ponds or canals and in the upland paddy fields. Two strains of *O. glaberrima* were collected in the rain-fed paddy field of Kilombero Experimental Station in Zanzibar Island.

Some morphological characters of husked grains

One hundred and nineteen strains of *O. sativa* cultivar and two strains of *O. glaberrima* were collected in this trip, and those were used for morphological investigations of husked grains. Measurements were done for length, width and thickness of husked grains, using 20 grains of each strain. Measurements were done too at the largest position of the respective characters. Moreover, of the husked grains, calcula-

Table 2. Some morphological characters of husked grains collected in Tanzania in 1988

Strain No.	Length (L) (mm)	Width (W) (mm)	Thickness (T) (mm)	L/W	L/T	W/T
101	7.92±0.38[1)]	2.50±0.08	1.90±0.06	3.16±0.15	4.17±0.20	1.31±0.04
102	7.69±0.36	2.46±0.13	1.92±0.07	3.13±0.28	3.99±0.18	1.27±0.08
103	8.07±0.38	2.57±0.18	1.98±0.05	3.14±0.25	4.06±0.17	1.29±0.08
104	7.15±0.36	2.52±0.18	1.84±0.07	2.86±0.14	3.87±0.16	1.35±0.05
105	7.38±0.39	2.42±0.18	1.88±0.07	3.07±0.37	3.91±0.25	1.28±0.11
106	7.61±0.44	2.65±0.23	1.92±0.07	2.88±0.23	3.95±0.14	1.38±0.11
107	7.80±0.41	2.54±0.15	1.88±0.04	3.07±0.21	4.11±0.22	1.34±0.07
108	6.65±0.36	2.53±0.13	1.91±0.06	2.58±0.18	3.43±0.21	1.33±0.10
109	6.80±0.36	2.61±0.21	2.08±0.09	2.61±0.17	3.27±0.14	1.25±0.09
110	7.46±0.23	2.54±0.16	1.88±0.07	2.98±0.09	3.95±0.14	1.32±0.05
111	6.00±0.19	2.50±0.19	1.68±0.05	2.40±0.07	3.55±0.13	1.48±0.04
112	8.00±0.33	2.53±0.13	1.92±0.05	3.16±0.22	4.16±0.19	1.32±0.06
113	6.96±0.30	2.55±0.22	1.78±0.08	2.78±0.12	3.90±0.23	1.40±0.06
114	7.88±0.28	2.50±0.16	1.93±0.05	3.15±0.11	4.07±0.12	1.29±0.03
115	7.11±0.44	2.50±0.19	1.74±0.05	2.87±0.37	4.07±0.20	1.43±0.13
116	7.46±0.41	2.52±0.18	1.93±0.05	2.98±0.16	3.85±0.22	1.29±0.03
117	6.65±0.49	2.46±0.23	1.75±0.09	2.72±0.34	3.81±0.21	1.41±0.12
118	7.19±0.31	2.51±0.20	1.86±0.12	2.81±0.20	3.80±0.30	1.35±0.10
119	6.92±0.26	2.69±0.24	1.98±0.07	2.58±0.22	3.48±0.13	1.35±0.13
120	6.38±0.34	2.65±0.23	1.88±0.12	2.41±0.14	3.38±0.15	1.40±0.11
121	7.07±0.33	2.38±0.21	1.85±0.09	2.99±0.30	3.82±0.25	1.28±0.10
122	7.34±0.45	2.65±0.23	1.78±0.08	2.78±0.28	4.12±0.29	1.48±0.10
123	6.84±0.41	2.53±0.13	1.78±0.08	2.70±0.22	3.84±0.22	1.42±0.10
124	7.38±0.21	2.51±0.15	1.89±0.04	2.95±0.08	3.90±0.12	1.32±0.03
125	7.69±0.36	2.50±0.21	1.95±0.06	3.07±0.14	3.94±0.20	1.28±0.04
126	6.65±0.30	2.42±0.18	1.84±0.05	2.75±0.18	3.60±0.14	1.31±0.08
127	7.80±0.31	2.52±0.15	1.91±0.05	3.07±0.18	4.07±0.18	1.32±0.07
128	7.46±0.36	2.46±0.13	1.83±0.05	2.96±0.32	3.95±0.35	1.33±0.07
129	6.76±0.24	2.46±0.13	1.88±0.07	2.76±0.23	3.60±0.19	1.31±0.10
130	7.46±0.53	2.92±0.18	1.97±0.08	2.55±0.19	3.77±0.24	1.47±0.07
131	6.96±0.23	3.00±0.04	1.86±0.06	2.78±0.09	3.74±0.13	1.34±0.04
132	7.11±0.39	2.53±0.13	1.89±0.04	2.81±0.21	3.75±0.23	1.33±0.07
133	6.96±0.30	2.50±0.08	1.85±0.05	2.78±0.12	3.76±0.16	1.35±0.03
134	6.92±0.18	2.52±0.07	1.87±0.05	2.76±0.07	3.69±0.14	1.33±0.03

135	6.84±0.23	2.50±0.04	1.66±0.05	2.73±0.09	4.10±0.23	1.49±0.04
136	6.65±0.45	3.01±0.11	1.78±0.04	2.66±0.18	3.73±0.30	1.40±0.03
137	6.88±0.21	2.53±0.12	1.77±0.06	2.75±0.08	3.88±0.14	1.41±0.04
138	7.80±0.31	2.61±0.21	1.94±0.07	3.00±0.21	4.02±0.12	1.34±0.09
139	6.69±0.24	2.52±0.09	1.78±0.07	2.67±0.09	3.74±0.10	1.40±0.05
140	6.88±0.21	2.50±0.03	1.81±0.07	2.75±0.08	3.79±0.12	1.37±0.05
141	6.92±0.18	3.02±0.07	1.84±0.06	2.76±0.07	3.76±0.15	1.35±0.04
142	6.38±0.39	2.51±0.11	1.79±0.05	2.55±0.15	3.55±0.22	1.39±0.04
143	7.34±0.36	2.38±0.21	1.80±0.08	3.11±0.38	4.08±0.29	1.32±0.14
144	7.38±2.15	2.57±0.18	1.96±0.03	2.86±0.85	3.77±1.10	1.31±0.09
145	7.15±0.23	2.50±0.06	1.81±0.03	2.86±0.09	3.95±0.13	1.38±0.03
146-1	6.42±0.38	2.52±0.10	1.74±0.03	2.56±0.15	3.68±0.18	1.43±0.03
146-2	7.26±0.42	2.46±0.13	1.78±0.07	2.96±0.28	4.07±0.27	1.38±0.08
147	6.76±0.50	2.54±0.14	1.96±0.03	2.70±0.20	3.45±0.26	1.27±0.02
148-1	7.76±0.31	2.51±0.13	1.92±0.07	3.10±0.12	4.04±0.26	1.30±0.04
148-2	5.84±0.23	2.52±0.09	1.60±0.05	2.33±0.09	3.65±0.14	1.56±0.05
149	7.11±0.28	2.50±0.11	1.76±0.04	2.84±0.11	4.04±0.15	1.42±0.03
150	6.80±0.24	2.51±0.13	1.81±0.08	2.72±0.09	3.75±0.09	1.37±0.06
151	7.88±0.94	2.53±0.13	1.98±0.07	3.11±0.41	3.98±0.47	1.28±0.07
152	7.11±0.48	2.51±0.08	1.90±0.08	2.84±0.19	3.74±0.27	1.31±0.05
153	7.30±0.36	2.84±0.23	2.02±0.04	2.58±0.24	3.61±0.17	1.40±0.11
154	7.96±0.36	2.50±0.03	1.96±0.06	3.18±0.14	4.06±0.16	1.27±0.04
155	7.00±0.39	2.61±0.21	1.86±0.07	2.68±0.14	3.76±0.24	1.40±0.12
156	8.11±0.34	3.01±0.15	1.94±0.07	2.70±0.11	4.17±0.23	1.54±0.06
157	7.34±0.30	2.50±0.04	1.85±0.05	2.90±0.14	3.97±0.21	1.36±0.06
158	6.73±0.31	2.76±0.24	1.86±0.06	2.45±0.25	3.58±0.24	1.46±0.14
159	6.92±0.47	2.57±0.18	1.88±0.09	2.70±0.26	3.68±0.29	1.37±0.15
160	7.15±0.45	2.53±0.13	1.84±0.08	2.82±0.25	3.88±0.19	1.38±0.09
161	7.30±0.41	2.46±0.13	1.81±0.09	2.93±0.23	3.99±0.08	1.37±0.10
162	7.50±0.39	2.65±0.23	1.90±0.09	2.84±0.30	3.93±0.22	1.39±0.13
163	6.96±0.23	3.00±0.13	1.70±0.08	2.35±0.09	3.61±0.16	1.53±0.08
164	7.57±0.38	2.80±0.24	1.91±0.07	2.72±0.31	3.94±0.12	1.46±0.13
165	7.73±0.37	2.69±0.24	1.98±0.07	2.87±0.30	3.91±0.14	1.37±0.11
166	7.23±0.24	2.50±0.05	1.79±0.09	2.85±0.19	3.95±0.38	1.38±0.06
167	7.15±0.30	2.65±0.23	1.89±0.08	2.71±0.25	3.78±0.11	1.40±0.14
168	7.57±0.33	2.53±0.13	1.81±0.09	2.98±0.15	4.19±0.26	1.40±0.08
169	7.34±0.41	2.51±0.11	1.84±0.07	2.93±0.16	3.97±0.16	1.35±0.05
170	7.19±0.24	2.53±0.13	1.75±0.10	2.84±0.17	4.12±0.25	1.45±0.14
171	6.50±0.27	2.34±0.23	1.78±0.04	2.80±0.31	3.64±0.15	1.31±0.13
172	5.61±0.28	2.50±0.08	1.63±0.07	2.27±0.14	3.51±0.22	1.54±0.06
173	5.42±0.18	2.65±0.23	1.83±0.05	2.06±0.19	2.95±0.15	1.44±0.14
174	7.19±0.31	2.52±0.13	1.78±0.06	2.87±0.12	4.04±0.25	1.40±0.05
175	7.23±0.86	2.76±0.31	1.96±0.15	2.66±0.55	3.70±0.55	1.41±0.14
176	7.15±0.49	2.30±0.24	1.82±0.08	3.06±0.36	3.92±0.22	1.29±0.11
177	5.65±0.45	2.69±0.24	1.81±0.09	2.12±0.28	3.12±0.26	1.48±0.16
178	6.38±0.34	2.73±0.24	1.99±0.17	2.35±0.20	3.21±0.22	1.37±0.06
179	6.53±0.41	2.50±0.22	1.83±0.06	2.61±0.16	3.56±0.26	1.36±0.05
180-1	6.19±0.24	2.53±0.13	1.81±0.05	2.44±0.15	3.40±0.14	1.39±0.06
180-2	6.96±0.23	2.52±0.17	1.95±0.05	2.78±0.09	3.56±0.14	1.28±0.03

181	7.30±0.36	2.50±0.19	1.90±0.07	2.92±0.22	3.88±0.22	1.33±0.10
182	7.00±0.43	2.50±0.23	1.70±0.08	2.77±0.22	4.03±0.41	1.45±0.08
183-1	6.57±0.33	2.52±0.14	1.81±0.06	2.63±0.18	3.63±0.18	1.38±0.05
183-2	6.34±0.63	2.53±0.21	1.76±0.19	2.53±0.25	3.61±0.41	1.43±0.22
184	8.07±0.26	2.53±0.13	1.99±0.07	3.19±0.21	4.04±0.15	1.27±0.10
185	6.57±0.43	2.03±0.13	1.67±0.13	3.24±0.31	3.95±0.43	1.22±0.07
186	6.46±0.36	2.46±0.13	1.84±0.07	2.63±0.22	3.50±0.15	1.33±0.09
187	6.07±0.26	2.38±0.21	1.71±0.08	2.57±0.30	3.55±0.22	1.39±0.10
188	5.76±0.24	2.50±0.05	1.72±0.05	2.30±0.09	3.34±0.12	1.45±0.04
189-1	6.88±0.21	2.52±0.11	1.88±0.06	2.75±0.08	3.65±0.13	1.32±0.04
189-2	6.84±0.41	3.26±0.31	2.22±0.12	2.10±0.16	3.08±0.21	1.47±0.14
190-1	5.73±0.31	2.51±0.09	1.74±0.06	2.29±0.12	3.29±0.20	1.43±0.05
190-2	6.07±0.18	2.50±0.13	1.68±0.04	2.43±0.07	3.60±0.12	1.48±0.03
191-1	6.03±0.23	2.52±0.18	1.79±0.09	2.41±0.09	3.37±0.19	1.39±0.07
191-2?	6.03±0.23	2.42±0.18	1.73±0.10	2.50±0.23	3.50±0.25	1.40±0.03
191-2	6.00±0.25	2.51±0.09	1.66±0.04	2.40±0.08	3.60±0.09	1.50±0.04
192	7.46±0.45	2.65±0.23	1.83±0.14	2.82±0.22	4.08±0.38	1.45±0.17
193-1	6.61±0.28	2.46±0.13	1.78±0.06	2.69±0.19	3.70±0.17	1.37±0.10
193-2	7.19±0.24	2.65±0.23	1.81±0.07	2.73±0.25	3.95±0.16	1.46±0.13
194	7.11±0.28	2.42±0.18	1.75±0.05	2.95±0.30	4.05±0.16	1.38±0.10
195	6.88±0.21	2.53±0.13	1.83±0.09	2.71±0.13	3.75±0.16	1.38±0.10
196	6.53±0.36	2.96±0.13	2.05±0.06	2.21±0.16	3.18±0.25	1.43±0.06
197	6.57±0.38	2.65±0.36	1.95±0.10	2.53±0.43	3.37±0.22	1.36±0.21
198	6.26±0.24	2.34±0.23	1.72±0.07	2.70±0.30	3.63±0.20	1.35±0.11
199	6.46±0.41	2.50±0.10	1.78±0.04	2.58±0.16	3.62±0.23	1.40±0.03
200	6.11±0.21	2.73±0.37	1.79±0.09	2.27±0.29	3.41±0.15	1.52±0.20
201	6.30±0.46	2.61±0.21	1.74±0.06	2.42±0.27	3.61±0.28	1.49±0.11
202	7.69±0.36	2.51±0.18	1.91±0.03	3.07±0.14	4.02±0.17	1.30±0.02
203-1	6.03±0.13	2.92±0.18	2.01±0.07	2.07±0.14	2.99±0.14	1.44±0.07
203-2	7.38±0.39	2.46±0.13	1.88±0.04	3.01±0.26	3.91±0.15	1.30±0.07
203-3	7.07±0.61	2.57±0.18	1.89±0.06	2.76±0.34	3.73±0.28	1.36±0.11
203-4	6.12±0.21	2.62±0.21	2.02±0.08	2.34±0.18	3.03±0.16	1.29±0.09
203-5	7.46±0.60	2.50±0.19	1.84±0.09	3.00±0.35	4.04±0.29	1.35±0.13
204-1	7.96±0.23	2.53±0.13	1.88±0.04	3.14±0.16	4.22±0.13	1.34±0.07
204-2	6.46±0.36	2.73±0.24	1.87±0.08	2.38±0.28	3.45±0.24	1.45±0.13
205	7.23±0.31	2.52±0.16	1.78±0.09	2.89±0.12	4.04±0.19	1.40±0.07
Grand mean[2)]	6.96±0.31	2.56±0.13	1.84±0.06	2.73±0.20	3.75±0.21	1.37±0.08
206-1[3)]	5.84±0.30	2.88±0.28	1.89±0.09	2.05±0.28	3.09±0.20	1.52±0.17
206-2[3)]	5.92±0.18	2.84±0.23	1.82±0.04	2.09±0.14	3.25±0.13	1.56±0.13
Grand mean[2)]	5.88±0.24	2.86±0.25	1.85±0.06	2.07±0.21	3.17±0.16	1.54±0.15

1) Mean of 20 grains and standard deviation.
2) Mean of means in the respective strains (n=119 in *O. sativa* and n=2 in *O. glaberrima*) and standard deviation.
3) *O. glaberrima*

tions were done on the ratios of the following components, namely, "length to width", "length to thickness" and "width to thickness" using average value of the respective characters.

The results are given in Table 2. In case of *O. sativa*, the outline is as follows. Lengths of grains were observed to be between 3.76 mm and 8.11 mm. The shortest grain was obtained in the strain No.147. The longest was obtained in No.156. Average value was found to be 6.94 mm. The standard deviations of each strain, *i.e.*, showing intra-strain variation, were noted to be between 0.13 (No.203-1) and 2.15 (No. 144).

Widths of grains were observed to be between 2.03 mm and 3.26 mm. The narrowest grain was obtained in No.185. The widest was obtained in No.189-2. Average value was found to be 2.56 mm. The standard deviations of each strain were noted to be between 0.03 (No.140 and No.154) and 0.37 (No.200).

Thicknesses of grains were observed to be between 0.78 mm and 2.22 mm. The thinnest grain was obtained in No.205. The thickest was obtained in No.189-2. Average value was found to be 1.83 mm. The standard deviations of each strain were noted to be between 0.03 (No.144, No.145, No.146-1, No.147 and No.202) and 0.19 (No.183-2).

To make clear the relationships of the three components, *i.e.*, length and width, length and thickness, and width and thickness of husked grains, correlation coefficients were calculated. The correlation coefficient between length and width of husked grains was ascertained to be 0.02, showing no significant correlation among them even at 5 % level. The correlation coefficient between length and thickness of husked grains was ascertained to be 0.46, showing significant correlation among them at 5 % level. The correlation coefficient between width and thickness was ascertained to be 0.45, showing significant correlation among them at 1 % level.

Ratios of grain-length to grain-width were observed to be between 2.06 and 3.24. The smallest value was obtained in No.173. The largest was obtained in No.185. Average value was found to be 2.73. The standard deviation of each strain, *i.e.*, showing intra-strain variation, was noted to be between 0.07 (No.111, No.134, No.141 and No.190-2) and 0.55 (No.175).

Ratios of grain-length to grain-thickness of husked grains were observed to be between 2.95 and 4.22. The smallest value was obtained in No.173. The largest was obtained in No.204-1. Average value was found to be 3.75. The standard deviation of each strain was noted to be between 0.08 (No.161) and 0.55 (No.175).

Ratios of grain-width to grain-thickness of husked grains were observed to be between 1.22 and 1.56. The smallest value was obtained in No.185. The largest was obtained in No.148-2. Average value was found to be 1.37. The standard deviation of each strain was noted to be between 0.02 (No.202) and 0.22 (No.183-2).

Length, width and thickness of husked grains of two samples of *O. glaberrima* were

observed to be 5.84 mm ± 0.30, 2.88 mm ± and 1.89 mm± 0.09 in No.206-1 and 5.92 mm ± 0.18, 2.84 mm ± 0.23 and 1.82 mm ± 0.04 in No.206-2, respectively. Average value was found to be 5.88 mm ± 0.24 in length, 2.86 mm ± 0.25 in width and 1.85 mm ± 0.06 in thickness.

Ratios of "grain-length to grain-width", "grain-length to grain-thickness" and "grain-width to grain-thickness" of husked grain were observed to be 2.05, 3.09 and 1.52 in No. 206-1, and 2.09, 3.25 and 1.56 in No.206-2, respectively. Average value was found to be 2.07 in "grain-length to grain-thickness", 3.17 in "grain-length to grain-thickness" and 1.54 in "grain-width to grain-thickness", respectively.

Summary

During the trip from June 30 to August 10 in 1988, in Tanzania, 121 strains of 106 seed sample of cultivated rice, *i.e.*, 119 strains of *Oryza sativa* L. and 2 strains of *O. glaberrima* STEUD., were collected. Their localities and habitats were reported (Table 1). Locality names are as follows; Ifakara, Mbeya, Ivuna, Kyela, Chimala, Iringa, Dodoma, Singida, Nzega, Ujiji, Biharamulo, Mwanza, Arusha, Moshi, Same, Ruvu, Zanzibar Island and Pemba Island.

One hundred and twenty one strains were used for morphological investigations of husked grains. In average values, length, width and thickness of husked greins were 6.94 mm, 2.56 mm and 1.84 mm in *O. sativa* cultivars, and 5.88 mm, 2.86 mm and 1.85 mm in *O. glaberrima*, respectively. Of husked grains, correlationships between length and width, length and thickness, and width and thickness were 0.02, 0.46 and 0.45, respectively. Of husked grains, ratios of the following components, namely, "length to width", "length to thickness" and "width to thickness", were 2.73, 3.75 and 1.37 of *O. sativa*, and 2.07, 3.17 and 1.54 of *O. glaberrima* in average value, respectively.

References

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