

Wild Rice of Tanzania Collected in 1984 and 1988

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Introduction

During the periods of the November in 1984 and from July to August in 1988, the writer had trips in Tanzania for the collection of the wild and cultivated rice species, 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, as the first and the third tours in Africa. In these opportunities, wild rices distributed in Tanzania were studied.

On the distribution of wild rice in Tanzania, some reports have already been published ^{1, 5, 6, 7)}. Although Tanzania has been considered to be one of the most important distribution areas of wild rice, accumulation of complete data on these aspects is far from being perfect. Taking these facts into account, the present study-series were made to accomplish the distribution and ecotypic differentiation of wild rice in Tanzania. In the previous paper ²⁾, the preliminary data have been reported in accordance with the first survey result made in 1984. In the following paper ³⁾, the habitat and grain characters of wild rice collected in 1988 were reported as the third survey result made in 1988. In the present paper, summarized data on habitat and the record of the morphological characters of unhusked grains of wild rice collected in 1984 and 1988 were presented.

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Abstract of distribution and habitat of wild *Oryza* species

The localities concerned in these trips were central, eastern, western, northern parts, and Zanzibar and Pemba Islands. Geographical distributions where wild rice was found were briefly illustrated in Fig. 1 of the previous paper ²⁾ in 1984 and also in Fig. 1 of another previous paper ³⁾ in 1988. In these figures, route of the trips and the growing areas of the wild rice are given. A numeral in these figures shows the collection numbers used

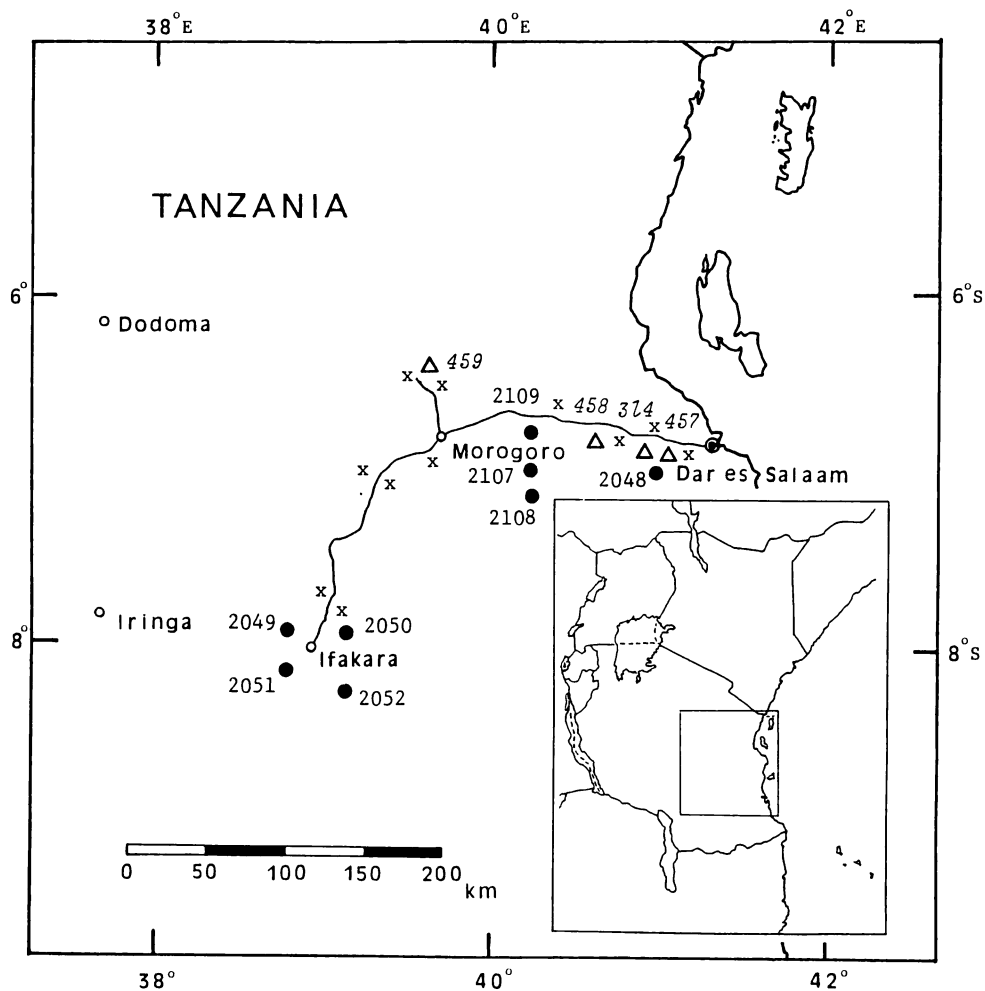


Fig. 1. Map showing several locality relations where the wild rice in Tanzania were collected in 1984 and 1988, only in overlapped areas in both years. Solid line; route of collection, filled circle [●]; collection site in 1984, triangle mark [△]; collection site in 1988, cross mark; growing area where the samples were observed but not collected, open circle; main town. Code numbers used in figure are corresponding to the accession numbers. *Italic* and roman letters show the strains collected in 1984 and 1988, respectively.

in the respective Tables 1.

Surveyed area only overlapped district in 1984 and 1988 is shown in Fig. 1. In the figure, route of trip and growing areas of wild rice are given. Code numbers used in the figure are corresponding to the accession numbers used in the Tables 2 and 3 of the previous paper ³⁾ and in Tables 1 and 3 of another previous paper ⁴⁾. *Italic* and roman letters show strains collected in 1984 and 1988, respectively.

The figure may be useful for future analyses on ecological differentiation. They were collected in seasons in November and from July to August in 1984 and 1988, respectively, then flowering times of the respective populations are differing from each other even they are growing sympatrically. It maybe expected to find "temporal isolation".

In other viewpoint, some one is allopatrically growing and another one is sympatrically growing with the cultivated rice species. It may be also expected to find genetic introgression in some case.

Most of the seed samples collected were divided into two parts, one of which was deposited in TARO, Tanzania, and another one was carried back to Japan and their plant- and grain-characters are now being analysed at Kagoshima University.

I. *Oryza longistaminata* CHEV. et ROEHR. (37 strains)

Populations of the species were found in several localities, *i.e.*, Kimara, Kibaha, Mlandizi, Chalinze, Bagmogo, Morogoro, Mikumi, Ifakara, Kyela, Ihahi, Mbarari, Shelui, Nzega, Kahama, Kigoma, Ujiji, Uvinza, Kasulu, Ibada, Mwanza, Mtwango, Kilombero, Bumbwi, Kasole, Kibirinzi.

Distribution of wild rice collected and only observed were listed up in Tables 1 of the respective previous papers ^{2, 3)}. In these tables, collection number, species name, data of collection or observation, detailed locality, and some information of habitat were described in order of date.

In brief, they had a creeping growth in the pond, paddy field, swamp, irrigation canal, riverbed, and waste land. They were sometimes adjacent to the cultivated rice field, being separated by an embankment.

II. *Oryza punctata* KOTSCHY (29 strains)

Populations of the species were found in several localities, *i.e.*, Kibaha, Kimara, Mlandizi, Chalinze, Dakawa, Mbarari, Dodoma, Issuna, Singida, Uvinza, Mwanza, Ruvu, Mtwango, Kilombero, Upenja, Bumbwi, Mkokotoni, Kasole, Kibirinzi, Ole.

Distribution of wild rice collected and observed were listed up in tables of the respective previous papers ^{2, 3)}, the same as *Oryza longistaminata*.

They were found in road-side ditch, edge of swamp or pond, waste land, and low bush. In general, they are growing in relatively shallow water areas but not in deep water areas.

Some morphological characters of unhusked grains

Thirty seven strains of *Oryza longistaminata* and 29 strains of *Oryza punctata* were collected in these trips, and they were used for morphological investigation of unhusked grains. Twenty grains were used for the measurements of each strain. Measurements were done at length, width and thickness of the respective grains, and done at the most eminent section of the respective characters. Calculations were done for the ratios of length to width, of length to thickness, and width to thickness. The whole data referring to the six characters were illustrated by the average values in the whole grains, which were shown in the respective Tables 2², 3³) (*O. longistaminata*) and Tables 2²) and 3³) (*O. punctata*). Although the weight of unhusked grains was also measured, this character was omitted in the present paper.

I. *Oryza longistaminata* (37 strains) (Accession No.304 and Nos.2048~2083)

The results are given in Table 1. In this table, 6 morphological characters of the unhusked grains were illustrated by average values of the respective 5 groups, *i.e.*, 4; strains collected in 1984, 5; strains collected in 1988, 6; strains collected in both years, 15; the summed-up data of strains collected in 1984 and 1985 in the 6 countries of Afri-

Table 1. Six morphological characters of unhusked grains collected in Tanzania, illustrated by average values of the respective groups, *O. longistaminata*, 4; strain collected in 1984 [1 strain], 5; strains collected in 1988 [36 strains], 6; strains collected in both years [37 strains], 15; the summed up data of strains collected in 1984 and 1985 in the 6 countries of Africa, *i.e.*, Madagascar, Kenya, Tanzania, Nigeria, Ivory Coast and Senegal [107 strains], 16; the same of in 1984, 1985 and 1988 [190 strains], upper column; practical values, lower column; standard deviations

Group mark	Length (mm)	Width (mm)	Thickness (mm)	L/W	L/T	W/T
4	9.05±0.46	2.58±0.07	1.79±0.09	3.50±0.14	5.07±0.32	1.45±0.07
5	8.70±0.41	2.34±0.17	1.63±0.07	3.77±0.24	5.37±0.24	1.44±0.07
6	8.71±0.41	2.34±0.17	1.64±0.08	3.76±0.24	5.36±0.25	1.44±0.07
15	8.64±0.60	2.42±0.19	1.63±0.10	3.59±0.25	5.31±0.36	1.49±0.10
16	8.47±0.63	2.36±0.20	1.60±0.11	3.61±0.26	5.31±0.33	1.48±0.09
4	0.46±0.00	0.07±0.00	0.09±0.00	0.14±0.00	0.32±0.00	0.07±0.00
5	0.53±0.11	0.20±0.06	0.12±0.03	0.38±0.08	0.48±0.11	0.14±0.03
6	0.52±0.11	0.19±0.07	0.12±0.03	0.37±0.08	0.48±0.11	0.14±0.03
15	0.32±0.16	0.11±0.05	0.07±0.03	0.20±0.11	0.29±0.16	0.09±0.05
16	0.39±0.17	0.14±0.06	0.09±0.04	0.26±0.12	0.37±0.16	0.11±0.05

ca, **16**; the same of 1984, 1985 and 1988, upper column; practical values, lower column; standard deviations. Data of **15** and **16** were adopted here for comparing strain characters of the whole African countries.

Lengths for the individual grain level ranged from 11.00 mm (Collection No.W57 in 1988, Accession No.2057) to 7.00 mm (Nos.2049 and 2066). Three of them were collected in 1988. In the strain level, the longest (9.53 mm) was obtained in No.2069, followed by No.2057 (9.48 mm) and No.2058 (9.34 mm). The shortest (7.87 mm) was noted in No.2066, followed by No.2049 (8.09 mm) and No.2053 (8.10 mm). Average and its standard deviations in the whole strains were found to be 8.71 ± 0.41 (Table 1).

In the standard deviations of each strain, *i.e.*, those showing the intra-population's variations, the largest (0.74) was obtained in No.2051, followed by No.2057 (0.72) and No.2076 (0.70). The smallest (0.33) was noted in No.2072, followed by No.2066 (0.35) and Nos.2048, 2067 and 2082 (0.41). Average and its standard deviations in the whole strains were found to be 0.52 ± 0.11 (Table 1 of the present paper and Table 11 of the previous paper ⁴).

Widths for the individual grain level ranged from 4.10 mm (No.2051), which was noticed as the particularly large value in the whole strains (=37), to 1.70 mm (No.2056). In the strain level, the widest (2.80 mm) was obtained in No.2051, followed by No.2069 (2.64 mm) and No.2073 (2.61 mm). The narrowest (2.12 mm) was noted in No.2068, followed by Nos.2071, 2080, 2082 and 2083 (2.16 mm). Average and its standard deviations in the whole strains were found to be 2.34 ± 0.17 .

In the standard deviations of each strain, the largest (0.50) was obtained in No.2051, which was the same as in case of the length, followed by No.2056 (0.27) and No.2074 (0.26). It was noticeable that the value of No.2051 was particularly large. The smallest (0.07) was noted in No.314, followed by No.2076 (0.10) and No.2082 (0.13), in which the latter was the same as in case of the length. Average and its standard deviations in the whole strains were found to be 0.19 ± 0.07 .

Thicknesses for the individual grain level ranged from 2.20 mm (No.2051), which was the same as in case of the width, to 1.00 mm (No.2062). In the strain level, the thickest (1.83 mm) was obtained in No.2051, which was also the same as in case of the width, followed by No.314 (1.79 mm) and No.2079 (1.75 mm). The thinnest (1.48 mm) was noted in No.2049, followed by No.2082 (1.50 mm) and No.2083 (1.52 mm), in which the latter two were also the same as in case of the width. Average and its standard deviations in the whole strains were found to be 1.64 ± 0.08 .

In the standard deviations of each strain, the largest (0.18) was obtained in No.2051, which was the same as in cases of the length and width, followed by Nos.2061 and 2062 (0.17). The smallest (0.07) was noted in Nos.2055, 2064 and 2077. Average and its standard deviations in the whole strains were found to be 0.12 ± 0.03 .

Ratios of the length to width (abbreviated as L/W in the table) for the individual

grain level ranged from 5.08 (No.2059) to 2.41 (No.2051). In the strain level, the largest (4.13) was obtained in No.2067, followed by No.2048 (4.12) and No.2054 (4.10). The smallest (3.28) was noted in No.2079, followed by No.2053 (3.29), which was the same as in case of the length, and No.2051 (3.39). Average and its standard deviations in the whole strains were found to be 3.76 ± 0.24 .

In the standard deviations of each strain, the largest (0.52) was obtained in No.2051, which was the same as in cases of the length, width and thickness, and No.2056, followed by No.2059 (0.51). The smallest (0.14) was noted in No.314, which was particularly small, followed by No.2066 (0.23) and No.2064 (0.25). Average and its standard deviations in the whole strains were found to be 0.37 ± 0.08 .

Ratios of the length to thickness (abbreviated as L/T in the table) for the individual grain level ranged from 7.42 (No.2065) to 3.92 (No.2053). In the strain level, the largest (5.86) was obtained in No.2054, followed by No.2058 (5.75), which was the same as in case of the length, and No.2082 (5.69). The smallest (4.76) was noted in No.2053, followed by No.2079 (4.82) and No.2078 (4.88). Average and its standard deviations in the whole strains were found to be 5.36 ± 0.25 .

In the standard deviations of each strain, the largest (0.76) was obtained in No. 2062, followed by No.2058 (0.73) and Nos.2059 and 2065 (0.67). The smallest (0.32) was noted in No.314, which was the same as in cases of the width and L/W, and No.2070, followed by No.2048 (0.34), which was the same as in case of the length. Average and its standard deviations in the whole strains were found to be 0.48 ± 0.11 .

Ratios of width to thickness (abbreviated as W/T in the table) for the individual grain level ranged from 2.40 (No.2062) to 1.11 (No.2066, which was the same as in case of the length, and No.2074). In the strain level, the largest (1.63) was obtained in No.2073, followed by No.2069 (1.57), which was the same as in case of the width, and No.2061 (0.53). The smallest (1.33) was noted in No.2067, followed by No.2048 (1.34), and Nos.2050, 2068, 2075, 2076 and 2080 (1.35), in which the last one was the same as in case of the width. Average and its standard deviations in the whole strains were found to be 1.44 ± 0.07 .

In the standard deviations of each strain, the largest (0.26) was obtained in No.2062, which was the same as in case of the L/T, followed by Nos.2051, 2058 and 2061 (0.18), in which the last one was the same as in case of the thickness. The smallest (0.07) was noted in No.314, which was the same as in cases of the width, L/W and L/T, followed by Nos.2067 and 2076 (0.09), in which the former and the latter were the same as in cases of the length and the width, respectively. It was noticed that Accession No.314 showed the smallest values in 4 characters, *i.e.*, width, L/W, L/T and W/T. Average and its standard deviations in the whole strains were found to be 0.14 ± 0.03 .

Group comparison in view of the practical values

(Upper column of Table 1)

They have different meanings in view of physiological, meteorological and phylogenetical characters, and should be separately considered also in morphological studies.

Grain level ---- The largest and the smallest values in view of the grain level were found in the strains collected in 1988 for the six characters.

Strain level ---- The whole characters showed the largest and the smallest values in the strains collected in 1988.

In comparison of group averages with 4 (1984) and 5 (1988), 4 characters, *i.e.*, length, width, thickness and W/T, showed the larger values in strains collected in 1984 (4) than those of 1988 (5). The remaining 2 characters, *i.e.*, L/W and L/T, showed the larger values in strain average of strains collected in 1988 (5) than those of 1984 (4). The tendency was approximately fixed to be reversed results obtained in grain level.

Group averages of 15 (1984 and 1985 of the whole African countries) showed the larger value than those of 4 and 5 in W/T, smaller values in length and L/T, and nearly the same in width, thickness and L/W, respectively.

Group averages of 16 (1984, 1985 and 1988 of the whole African countries) showed the larger value than those of 4 and 5 in W/T, which was the same as in case of 15, smaller values in length, thickness and L/T, and the nearly the same in width and L/T, respectively.

Group comparison in view of the standard deviations

(Lower column of Table 1)

The whole largest values were found in the strains collected in 1988. The two smallest values, *i.e.*, length and thickness, were found in the strains collected in 1984. The remaining 4 smallest values were found in the strains collected in 1988.

In the group averages, the whole data concerning 6 characters showed the largest or nearly the largest in 5, followed by 6. The data of 4 showed the smallest ones. It was interesting results in view of group differentiation.

In comparison with data of 15 and 16, the following facts were found to some extent. The data of 4 showed the smaller or the same as those of 15 and 16. On the contrary, the whole data of 5 and 6 showed the larger ones than those of 15 and 16.

II. *Oryza punctata* (29 strains) (Accession Nos.457~459 and Nos.2084~2109)

The results are given in Table 2. In this table, 6 morphological characters of the unhusked grains were illustrated by average values of the respective 5 groups, *i.e.*, 25;

Table 2. Six morphological characters of unhusked grains collected in Tanzania, illustrated by average values of the respective groups, *O. punctata*, **25**; strains collected in 1984 [3 strains], **26**; strains collected in 1988 [26 strains], **27**; strains collected in both years [29 strains], **31**; the summed-up data of strains collected in 1984 and 1985 in two countries of Africa, *i.e.*, Tanzania and Kenya [18 strains], **32**; the same of 1984, 1985 and 1988 [44 strains], upper column; practical values, lower column; standard deviations

Group mark	Length (mm)	Width (mm)	Thickness (mm)	L/W	L/T	W/T
25	6.40±0.22	2.50±0.02	1.56±0.01	2.57±0.11	4.12±0.16	1.61±0.01
26	5.96±0.25	2.29±0.11	1.51±0.05	2.62±0.15	3.96±0.20	1.52±0.07
27	6.01±0.28	2.31±0.12	1.52±0.05	2.62±0.15	3.98±0.20	1.53±0.07
31	6.30±0.53	2.43±0.08	1.53±0.05	2.60±0.22	4.14±0.30	1.60±0.06
32	6.10±0.42	2.35±0.12	1.52±0.05	2.61±0.18	4.04±0.26	1.56±0.08
25	0.37±0.13	0.12±0.03	0.11±0.02	0.20±0.06	0.38±0.02	0.12±0.03
26	0.40±0.07	0.16±0.03	0.08±0.01	0.26±0.08	0.33±0.06	0.13±0.02
27	0.39±0.08	0.16±0.03	0.09±0.02	0.25±0.08	0.34±0.05	0.13±0.02
31	0.42±0.13	0.12±0.04	0.13±0.04	0.21±0.07	0.43±0.13	0.14±0.05
32	0.40±0.10	0.15±0.04	0.10±0.04	0.24±0.08	0.37±0.11	0.14±0.04

strains collected in 1984, **26**; strains collected in 1988, **27**; strains collected in both years, **31**; the summed-up data of collected in 1984 and 1985 in the 2 countries of Africa, **32**; the same of 1984, 1985 and 1988, upper column; practical values, lower column; standard deviations. Data of **31** and **32** were adopted here for comparing strain characters of the whole African countries.

Lengths for the individual grain level ranged from 7.90 mm (Collection No.W157 in 1984, Accession No.457) to 4.80 mm (Nos.2100 and 2106). In the strain level, the longest (6.70 mm) was obtained in No.457, followed by No.2091 (6.42 mm) and No.2093 (6.36 mm). It was noticed that the value was particularly large in No.457. The shortest (5.51 mm) was noted in No.2090, followed by No.2106 (5.52 mm) and No.2105 (5.67 mm). Average and its standard deviations in the whole strains were found to be 6.01 ± 0.28.

In the standard deviations of each strain, *i.e.*, those showing intra-population's variations, the largest (0.56) was obtained in No.2091, followed by No.457 (0.54) and No.2094 (0.53). The smallest (0.22) was noted in No.458, followed by Nos.2084 and 2098 (0.28). Average and its standard deviations in the whole strains were found to be 0.39 ± 0.08.

Widths for the individual grain level ranged from 2.80 mm (Nos.459, 2085 and 2098) to 1.70 mm (No.2089). In the strain level, the widest (2.53 mm) was obtained in No. 458, followed by Nos.2098 and 2102 (2.52 mm). The narrowest (2.04 mm) was noted in

No.2089, followed by No.2090 (2.12 mm) and No.2105 (2.16 mm), in which the latter was the same as in case of the length. Average and its standard deviations in the whole strains were found to be 2.31 ± 0.12 .

In the standard deviations of each strain, the largest (0.21) was obtained in No.2108, followed by No.2088 (0.20), and Nos.2087, 2092, 2094, 2095 and 2099 (0.19). The smallest (0.10) was noted in Nos.457 and 458, in which the latter was the same as in case of the length, followed by No.2084 (0.11). Average and its standard deviations in the whole strains were found to be 0.16 ± 0.03 .

Thicknesses for the individual grain level ranged from 1.85 mm (No.458) to 1.30 mm (Nos.2086, 2089, 2090, 2093, 2094, 2102, 2103 and 2105, in which No.2089 was the same as in case of the width). In the strain level, the thickest (1.61 mm) was obtained in Nos.2085 and 2098, followed by No.2088 (1.60 mm). The thinnest (1.43 mm) was noted in No.2090, which was the same as in case of the length, and No.2105, followed by No.2102 (1.44 mm). Average and its standard deviations in the whole strains were found to be 1.52 ± 0.05 .

In the standard deviations of each strain, the largest (0.14) was obtained in No.458, followed by No.2093 (0.12), and Nos.459, 2091, 2092, 2106, 2108 and 2109 (0.10), in which No.2092 was the same as in case of the width. The smallest (0.06) was noted in Nos.2087, 2095, 2099 and 2104. Average and its standard deviations in the whole strains were found to be 0.09 ± 0.02 .

Ratios of length to width (abbreviated as L/W in the table) for the grain level ranged from 3.70 (No.2091) to 1.93 (No.2087). In the strain level, the largest (2.96) was obtained in No.2091, followed by No.2089 (2.93) and No.2092 (2.90). The smallest (2.39) was noted in No.2106 and No.2109, followed by No.458 (2.45). Average and its standard deviations in the whole strains were found to be 2.62 ± 0.15 .

In the standard deviations of each strain, the largest (0.41) was obtained in No.2108, which was the same as in case of the width, followed by Nos.2089 and 2095 (0.36), in which the latter was also the same as in case of the width. The smallest (0.12) was noted in No.2103, followed by Nos.458 and 2101 (0.13). Average and its standard deviations in the whole strains were found to be 0.25 ± 0.08 .

Ratios of length to thickness (abbreviated as L/T in the table) for the individual grain level ranged from 5.46 (No.2093) to 3.00 (Nos.2099, 2100 and 2108), in which No.2100 was the same as in case of the length. In the strain level, the largest (4.42) was obtained in No.2102, followed by No.457 (4.33) and No.2091 (4.29), in which the latter was the same as in case of the length. The smallest (3.65) was noted in No. 2106, which was the same as in case of the ratio of length to width (L/W), followed by No.2099 (3.71) and No.2107 (3.73). Average and its standard deviations in the whole strains were found to be 3.98 ± 0.20 .

In the standard deviations of each strain, the largest (0.47) was obtained in No. 2093, followed by No.2091 (0.45) and No.2092 (0.43), which were the same as in case of

the thickness. The smallest (0.22) was noted in No.2085, followed by No.2098 (0.25), which was the same as in case of length, and No.2096 (0.27). Average and its standard deviations in the whole strains were found to be 0.34 ± 0.05 .

Ratios of width to thickness (abbreviated as W/T in the table) for the grain level ranged from 2.12 (No.2102) to 1.15 (Nos.2095 and 2100), in which the latter was the same as in cases of the length and the ratio of length to thickness (L/T). In the strain level, the largest (1.76) was obtained in No.2102, which was the same as in case of the ratio of length to thickness (L/T), followed by No.2103 (1.64) and No.2109 (1.62). The smallest (1.39) was noted in No.2095, followed by No.2089 (1.41), and Nos.2091 and 2107 (1.46), in which the latter was the same as in case of the ratio of length to thickness (L/T). Average and its standard deviations in the whole strains were found to be 1.53 ± 0.07 .

In the standard deviations of each strain, the largest (0.17) was obtained in Nos.2092, 2094 and 2100. The smallest (0.08) was noted in No.459, followed by No.2086 (0.10), and Nos.2084, 2088, 2090, 2103 and 2106 (0.11), in which No.2084 was the same as in cases of the length and the width. Average and its standard deviations in the whole strains were found to be 0.13 ± 0.02 .

Group comparison in view of the practical values

(Upper column of Table 2)

They have different meanings in view of physiological, meteorological and phylogenetical characters, and should be separately considered also in morphological studies.

Grain level --- The half of the largest values, *i.e.*, length, width and thickness, were obtained in strains collected in 1984 in view of the grain level. The remaining half of the largest values, *i.e.*, L/W, L/T and W/T, and the whole of the smallest values were found in the strains collected in 1988.

Strain level --- Two characters, *i.e.*, length and width, showed the largest values in the strains collected in 1984. The remaining 4 characters showed the largest values in the strains collected in 1988. The whole smallest values were found in the strains collected in 1988.

In comparison of group averages with **25** (1984) and **26** (1988), 1 character, *i.e.*, L/W, showed the larger value in strains collected in 1988 (**26**) than those of 1984 (**25**). The remaining 5 characters showed the larger values in the strains collected in 1984 (**25**) than those of 1988 (**26**).

Group averages of **31** (1984 and 1985 of the whole African countries) showed nearly the **mid-25-26** values. Group averages of **32** (1984, 1985 and 1988 of the whole African countries) showed nearly the same tendency of those of **31**.

Group comparison in view of the standard deviations

(Lower column of Table 2)

One largest value, *i.e.*, thickness, and 3 smallest values, *i.e.*, length, width and W/T, were found in the strains collected in 1984. The remaining 5 largest and 3 smallest values were found in the strains collected in 1988.

In group averages, 2 characters, *i.e.*, thickness and L/T, showed the larger values in the strains collected in 1984 (25) than those of 1988 (26). The remaining 4 characters showed the larger values in the strains collected in 1988 (26) than those of 1984 (25).

Group averages of 31 (1984 and 1985 of the whole African countries) showed the larger values than those of 25 and 26 in 4 characters, *i.e.*, length, thickness, L/T and W/T. Group averages of 32 (1984, 1985 and 1988 of the whole African countries) showed nearly the mid-25-26 values, except L/T, which was found to be larger than those of 25 and 26. It was interesting results in view of group differentiation.

Summary

During the period of November in 1984 and from July to August in 1988, the writer had trips in Tanzania for collection of the wild and cultivated rice species. During the trips, 66 strains of wild rice, *i.e.*, 37 of *Oryza longistaminata* CHEV. et ROEHR., and 29 of *Oryza punctata* KOTSCHY, were collected, and many populations of them were observed. Their localities and habitats were reported briefly.

O. longistaminata --- From the analyses of grain characters of the unhusked grains, average values and the standard deviations in the whole strains were found to be $8.71 \text{ mm} \pm 0.41$, $2.34 \text{ mm} \pm 0.17$, $1.64 \text{ mm} \pm 0.08$, 3.76 ± 0.24 , 5.36 ± 0.25 and 1.44 ± 0.07 in length, width, thickness, ratios of length to width, of length to thickness, and of width to thickness, respectively. Most of the data showed larger values in the strains collected in 1988 than those of strains collected in 1984.

In the standard deviations of each strain, *i.e.*, those showing intra-population's variations, average values and the standard deviations in the whole strains were found to be 0.52 ± 0.11 , 0.19 ± 0.07 , 0.12 ± 0.03 , 0.37 ± 0.08 , 0.48 ± 0.11 and 0.14 ± 0.03 in the same order, respectively. It was noticed that a lot of data showed the smaller values in the strains collected in 1984 than those of 1988, and the larger values in the strains collected in Tanzania than those of the whole African countries. It was noticed that Accession No.314, collected in pond near Kibaha, showed the smallest standard deviations in 4 characters, *i.e.*, width, L/W, L/T and W/T, through the whole strains.

O. punctata --- Average values and the standard deviations in the whole strains were found to be $6.01 \text{ mm} \pm 0.28$, $2.31 \text{ mm} \pm 0.12$, $1.52 \text{ mm} \pm 0.05$, 2.62 ± 0.15 , 3.98 ± 0.20 and 1.53 ± 0.07 , in the same order, respectively. The most group average values of

strains collected in 1988 showed the extreme values in comparison with those of 1984.

In the standard deviations of each strain, average values and the standard deviations in the whole strains were found to be 0.39 ± 0.08 , 0.16 ± 0.03 , 0.09 ± 0.02 , 0.25 ± 0.08 , 0.34 ± 0.05 and 0.13 ± 0.02 in the same order, respectively. It was interesting facts that the two thirds cases of extreme values were found in the strains collected in 1988.

Basing on the analyses of the data in the field survey, morphological, genetical and ecological characters, geographical, ecotypic and varietal differentiations could be discussed and concluded in the future.

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