A CATALOGUE OF PASSPORT AND CHARACTERIZATION DATA OF SORGHUM, PEARL MILLET AND FINGER MILLET GERMPLASM FROM ZIMBABWE

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PREFACE

A germplasm-collecting programme in Zimbabwe was launched jointly by the International Board for Plant Genetic Resources (IBPGR), Research and Specialist Services (R&SS) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) during April July 1982. In total, 2,068 samples of 58 species were obtained. Since pearl millet, sorghum and finger millet are traditional crops of Zimbabwe, they were evaluated according to standardized descriptors. Passport data, along with evaluation data, are provided in the catalogue. It is hoped that this will be of use to crop improvement scientists. Most of the accessions were collected at random. Evaluation data of a few accessions are missing because they failed to germinate; no data for a few descriptors indicate missing information.

The collection and characterization of germplasm from Zimbabwe was possible because of the keen interest evinced by Dr. Philip Chigaru, Director and Mr. R.J. Fenner, Assistant Director, R&SS, Dr. J.T. Williams, Director, IBPGR and Mr. A.F. Attere, IBPGR Field Officer for Eastern Africa. Mr. Rob Olver, Head, Crop Breeding Institute (CBI), Harare and Dr. L.R. House, Project Manager, ICRISAT Regional Program, Matopos near Bulawayo provided facilities to grow and evaluate the germplasm. Mr. R.F. Muza, Millet Breeder, CBI, was associated with every stage of the exercise and assisted in recording the data.

Ms. Jane Toll, IBPGR and Mr. Vincent Gwarazimba, R&SS were involved in collecting the germplasm during 1982. Mr. K.E. Kolding, FAO Representative in Zimbabwe and UNDP, Harare provided assistance. Thanks are also due to Dr. M.H. Mengesha, Leader, Mr. K.E. Prasada Rao, Senior Germplasm Botanist, and C. Rajagopal Reddy, Research Associate, Genetic Resources Unit, ICRISAT, for their help. One of us (Appa Rao) is grateful to ICRISAT and IBPGR for supporting his sabbatical. Lastly, thanks are due to Miss Edeline and Mr. D. Bapa Rao for typing the manuscript.

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GERMPLASM COLLECTION

During April-July 1982, the International Board for Plant Genetic Resources (IBPGR), the Crop Breeding Institute (CBI) of the Research and Specialist Services (R&SS) and the International Crops Research Institute of the Semi-Arid Tropics (ICRISAT) launched a germplasm collecting mission for major crops in Zimbabwe. The collecting team consisted of Ms. Jane Toll (IBPGR), Mr. Vincent Gwarazimba (R&SS), Mr. Ruredzo (IBPGR) and Dr. S. Appa Rao (ICRISAT).

There are about 170 communal areas in the country. They are individually named and differ greatly in size and population density. Nearly 75% of the communal areas are located in natural regions IV and V where the rainfall is 400-500 mm and erratic. Over 1 million farmers are engaged in dry land farming. It is in these communal areas that traditional crops are still grown and these are the areas rich in crop diversity. Hence, emphasis was on collecting from the communal areas. The team travelled extensively and collected from most of the communal areas, acquiring 2,086 samples of 58 species (Toll, 1982).

While collecting, information about the samples was gathered using standard collection data proforma developed by IBPGR. Each sample has a corresponding collection form on which is recorded the collection number, crop, date of collection, description of site and crop sample, and other observations. They are available at R&SS Harare, ICRISAT, Patancheru, India and IBPGR, Rome.

The users of germplasm are usually interested in the exact location from where a sample was collected, its status and uses. Keeping the user's needs in mind, a set of 13 passport descriptors was identified and tabulated.

In Zimbabwe, the important food crops are maize (980,675 ha), pearl millet (341,244 ha), sorghum (160,158 ha) and finger millet (119,495 ha) in that order (Tattersfield, 1982). Traditional forms of maize are hardly to be found because improved cultivars, especially commercial hybrids, are grown even in remote areas. Hence, only 36 samples of maize were collected (Toll, 1982). However, considerable variation was observed in pearl millet, sorghum and finger millet (Appa Rao and Mengesha, 1982). To exploit and facilitate utilization of the germplasm, it was felt desirable to evaluate the germplasm at or near its place of origin.

Characterization

Sorghum, pearl millet and finger millet were characterized at the Variety Testing Center (VTC) Gwebi, Agricultural Research Station, Panmure and at Matopos near Bulawayo, in collaboration with the SADCC/ICRISAT Sorghum and Millet Improvement Program. To realize the full potential of the material, the germplasm was grown under good management conditions. For evaluation, each accession was grown in 1 row, 4 m long, spaced 75 cm apart. The crops were over-planted and then thinned to 10 cm within a row in the case of pearl millet, 12 cm for sorghum and 5 cm in finger millet. The materials were grown as 3 replications at Gwebi, one each at Matopos and Panmure.

For evaluation, the standardized sorghum and pearl millet descriptors were used (IBPGR/ICRISAT, 1980, 1981). However, to facilitate data analysis by computer, a numerical coding was used. All descriptors used were fully described for the convenience of users.

Data were recorded on 5 random plants in each replication and only the mean value is given in the catalogue. For descriptors with a numerical value (e.g. on a 1 to 9 scale), mean values were rounded to the nearest figure.

The passport data are given in Table 2 for sorghum, Table 4 for pearl millet and Table 6 for finger millet. The evaluation data are given in Table 3 for sorghum, Table 5 for pearl millet and Table 7 for finger millet.

SORGHUM

Morphological variation

Commercial farmers grow hybrids like DC75 and DC99 which were developed in south Africa. Communal farmers, however, grow only traditional landraces, which are very tall and produce lax, grass-like panicles (Fig. 1) which mature very late. Late types mature after the cessation of rains and hence avoid grain-weathering problems.

Quite often farmers grow mixtures of different morphological types in the same field (Fig. 2). Semi-compact erect kafirs can be found growing together with loose, drooping panicles of guinea types. It is very common to find farmers harvesting small quantities at different times from the same field. The explanation one often gets from the farmer is that she (men are rarely found in the fields) needs cultivars which mature at different times to meet the immediate food requirements. Farmers put aside a few good heads each time they harvest for future seed purposes, and next year's seed is represented by different maturity forms. The selected heads are bundled (Fig. 3) and hung on the knuckle. Probably the smoke from the kiln keeps insect away.

Considerable variation was found for plant height (60 cm in the case of 'Red Swazi' to over 300 cm in the case of 'Framida'), panicle length (very small as in 'Chisumbanje' to very large as in 'Impala'), and very loose to very compact panicles. The grain colour varied from white pearly to dark blue or black with or without a sub-coat; grain size also varied (Table 1). Variation for morphological characters was more apparent in the southeast. In the north of the country, in the Zambezi Valley, variability was surprisingly low; mostly guinea or kafir guinea with loose panicles were found.

Fig. 1. Sorghum landraces from Zimbabwe grow very tall, and produce loose, grass-like panicles.

Fig. 2. A mixture of different kinds (even different races) of guinea and kafir are grown in the same field.

Fig. 3. For seed purposes, panicles are selected, bundled, dried and tied to the knuckle.

Races of sorghum found in Zimbabwe

Kafir: The home of the race kafir is southern Africa, which includes Zimbabwe (de Wet and Harlan, 1971). Kafirs are extensively distributed throughout the country. The panicles are semi-compact to erect and the grain colour may be white, brown or red (Fig. 4). The spherical grains are symmetrical and the glumes tightly clasp the grain. Most of the US sorghum hybrids are related to kafirs or kafir caudatums.

Caudatums: This race is extensively grown, especially in Masvingo, Matabeleland south and Manicaland provinces. The panicles are semi compact; erect or drooping; the grain is usually red or brown (Fig. 5). The asymmetrical grains are turtle shaped on one side and concave on the other. The style is persistent and points towards the concave side.

Guinea: The panicles are loose, drooping, usually with small, pearly white grains (Fig. 6) with a hard endosperm. The grains are flattened dorsoventrally, twisting 90° between involute glumes which are as long as the grain. At maturity, the grains thresh very easily. This race is supposed to have been primarily west African in origin, with a secondary centre in Tanzania-Malawi. It is extensively grown around Birchenou, Chibi, Bikita, Matsai, Zambezi Valley, and the Sabi and Limpompo Basins.

Cultivars belonging to this race are generally used for preparing thick porridge. Intermediate forms between guinea and caudatum are also common as these 2 races are grown in adjacent fields. It appears that the secondary centre for the guinea should extend beyond Malawi-Tanzania to include Zimbabwe.

Durra: The race durra was represented by samples obtained at the International Trade Fair, Bulawayo, but it was not found in farmers' fields. The very compact oval panicle produced white or red grains with characteristic bending of the panicle (Fig. 7).

Bicolor: The race bicolor is found throughout the country. It is grown in small areas mainly for chewing. The symmetrical grain which is oval to elongated in shape is tightly enclosed by the glumes. The grains are mostly red or brown and bitter in taste.

Intermediate races

The most common intermediate races are hybrids between kafir, caudatum and guinea. These either occur because the farmers grow a mixture of 2 or more races in the same field, and so natural cross-pollination occurs, or because different races are grown in adjacent fields. Some of the intermediate races may be due to natural crossing of introduced material with the local material.

Fig. 4. Different panicles of the race kafir, the most extensively grown in Zimbabwe.

Fig. 5. Spikes of the race caudatum.

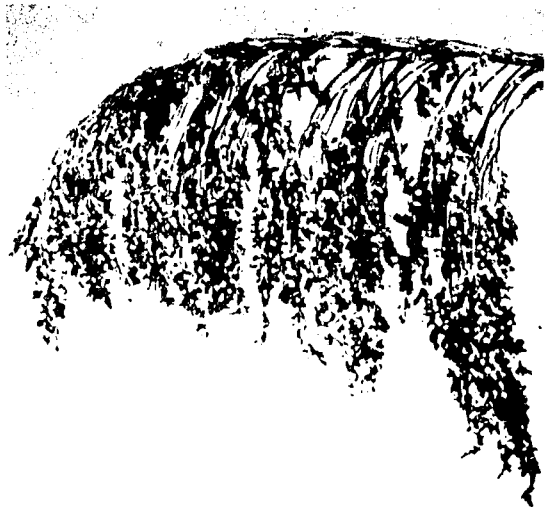

Fig. 6. Loose drooping panicles with twisted pearly white grains of the race guinea. The grain is preferred for porridge.

The occurrence of all the 5 basic races in Zimbabwe is influenced by geographic location, between southern Africa to east Africa, diverse agroclimatic conditions, and selection and maintenance of different types by the farmers.

Local names and their significance

Farmers call different forms of sorghum by different names which vary for several characters (Table 1). Some names indicate panicle type; for instance the name 'chifumbata' is used to designate compact sorghum and finger millet heads. Some names indicate the country from where they where introduced; 'chibhurandaya' means coming from Malawi, 'chizambia' means coming from Zambia. One farmer near Mukumbura proudly showed his red grain sorghum which he obtained from Mozambique.

Grain colour and bird damage

Grain loss due to bird damage, especially Quelea, is considerable in much of Zimbabwe. After recording data at Gwebi, one replication was left without bird 'scaring' and bird damage was visually scored. There were some accessions where not a single grain was left by the birds and some accessions in which there was no damage. Most of the entries in which bird damage was not found had brown or red grains. It is well known that red-brown grained sorghums are bird 'resistant' because of the presence of tannins in the sub-coat. The few white-grained types where bird damage was not found deserve further investigation. If they are truly bird resistant it is worth determining whether they have anti nutrients.

Sweet-stalk sorghums

In all the communal areas, sweet-stalk sorghums are grown in the backyards for chewing, like sugarcane. Sweet-stalk sorghums are also marketed near urban areas. Sometimes they are peeled, dried and stored for future consumption. In general, sweet-stalk sorghums have thick intermodes, which are longer than the leaf sheaths, and grow very tall, without the waxy bloom. The grain is usually bitter and red in colour. The majority of them belong to the race bicolor. The stalks are sweet at the dough stage. Considerable variation in sweetness was observed among the sweet stalks. At maturity the stems usually break, turn red and produce a characteristic odour. All the sweet-stalk types have dull midrib colour. Most of the old farmers identify sweet-stalk by this colour. Because of luxuriant vegetative growth, these types may be suitable as fodder types.

Wild relatives

Sorghum halapense was found in Manicaland and Mashonaland mostly in the highveld. Sorghum verticilliflorum was found in dry areas. It produces very loose panicles with very thin stems, and small oval grains completely enclosed by dark blue glumes. The Flora Zambesiaca also cites these 2 wild species of sorghum.

Utilization

Although most of the accessions grow very tall and mature very late, they confer local adaptability. The local germplasm usually has good grain quality.

Fig. 7. The compact oval shaped head with bold grain of the race durra.

Fig. 8. The landrace chisumbanje has good grain quality, but the grain is small.

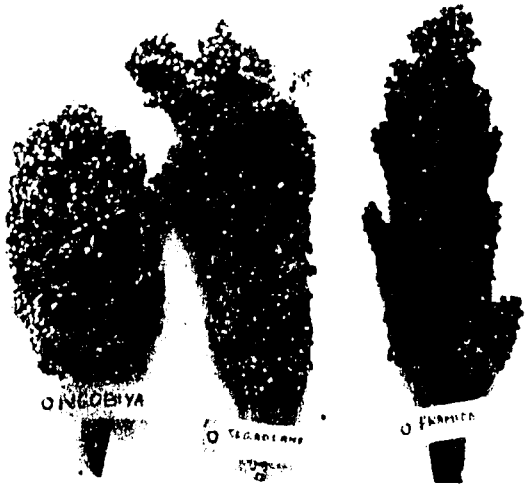

Fig. 9. Other popular landraces are Ngobiya, Segaolane and Framida, which is reported to be resistant to striga.

Fig. 10. Different types of sorghum panicles collected from Zimbabwe.

Fig. 11. Throughout almost the whole of Zimbabwe, sorghum/millet flour is made by grinding the grains between stones.

Fig. 12. Pearl millet and sorghum are often grown together, especially in the backyard.

The local sorghum collected from Chisumbanje (Fig. 8) was found to be the best for cooking as whole grain like rice (Mushonga and Appa Rao, 1986). It can be used to transfer desirable grain quality to high-yielding cultivars. Some of the races like framida (Fig. 9) were already found to be resistant to Striga (Ramaiah and Parker, 1982). A number of framida samples from different areas were collected which differ for panicle and grain size. It may be worth screening all the accessions of framida for Striga resistance. The different panicle types collected (Fig. 10) offer scope for selection.

Local germplasm collected from Lupane Mazola, which looked promising in the field, was already crossed with exotic introductions to obtain useful segregates (House, 1985). To transfer the good grain quality of chisumbanje, early maturity and wide adaptability of red swazi, framida and many others were crossed to exotic introductions (Mushonga and Appa Rao, 1985). Most farmers believe that local germplasm produces good flour (Fig. 11) and this trait can be transferred to high-yielding cultivars.

Probably the most useful way of utilizing the local germplasm is to convert them as male steriles (House, 1985). Male sterility arises from crosses involving race milo cytoplasm and race kafir genome. The race kafir evolved in southern Africa, hence many local varieties may result in male sterility when crossed to plants with milo cytoplasm. Several of the kafir types collected could be crossed with different milos to recover male-sterile lines through backcross breeding.

PEARL MILLET

Next to maize, pearl millet is the most extensively grown crop. It is grown over an estimated 341,244 ha (Tattersfield, 1982). The important millet-growing areas are the Inyanga and Mutare districts in Manicaland, Murewa, Mudzi, Mtoko in Mashonaland east, Binga, Bubi, Lupane, Nkayi and Hwange in Matabeleland north and Mangwe in Matabeleland south. For certain reasons the most important millet-growing areas, viz. Matabeleland north and south, could not be explored. Hence pearl millet germplasm is not fully representative in the present collection. Pearl millet and sorghum are often grown together (Fig. 12).

Variation within samples

Considerable variation was found within a single field for plant height, maturity (Fig. 13), spike shape, size and presence or absence of bristles (Fig. 14). Since pearl millet is a cross-pollinated crop, variation within populations is expected. Though farmers select large heads for seed purposes, other types appear because of allogamy. The fields around Buhera appear to be fairly uniform (Fig. 15).

General variability

The primitive cultivars grown by the farmers become very tall, flower very late and produce large spikes. Considerable variation is found for several spike characters (Fig. 16); spike size, shape, grain compactness, presence or absence of bristles. Long cylindrical heads with small grains are very common.

Fig. 13. Pearl millet landraces grow very tall, and produce large heads; farmers grow a mixture of different types.

Fig. 14. Different spike types found in a single field; spikes differ in shape, size, compactness and bristle length.

Fig. 15. The collecting mission was launched to coincide with the harvest time.

Wild and weedy relatives

The wild progenitor (Brunken et al., 1977) Pennisetum violaceum was not found in any of the areas of the country we travelled, and its distribution also has not been reported as being this extensive. A few intermediate types, however, which resembled subspecies stenostachyum, were observed growing in fields along with cultivated types. In Matsai communal area in Masvingo province the weedy forms are called 'pfidza'; around Neshuro, they are called 'nguyu'. The farmers believe that these weedy forms are from the previous year (Appa Rao et al., 1985). Because of shattering, seeds become buried in the soil and germinate the following year with the onset of rains. They are thus self perpetuating.

These intermediate forms were believed to be natural hybrids between wild and cultivated types (Brunken et al., 1977). The wild types, however, which can cross with cultivated forms, were not found. Hence, these weedy types are probably self perpetuating from the original introductions. Their shattering nature and seed dormancy may contribute to their perpetuation.

Pennisetum purpureum was observed on river banks, at the roadside and on bunds of fertile soil from 100 to 2,000 m elevation in Mutare, Inyanga, Mt. Darwin and many other locations. It grows over 2 m tall and produces several spikes with shattering spikelets. It is used to make mats and as fencing material.

Pennisetum polystachyon is also extensively distributed throughout the country. It was found at elevations of 100 to 1,500 m on sandy soils, around Mzabarani, Inyanga and many other locations.

Pennisetum orientale was found virtually throughout Zimbabwe. It seems to be an introduced plant as it is found mostly in urban areas. It makes a good ornamental plant because the dry spikelets do not shatter easily and it is perennial, resistant to drought and easy to grow. The few occasional plants found in wild habitats may be escapees.

Utilization

Pearl millet germplasm from Zimbabwe shows evidence of local adaptability. Mass selection from the material collected around Tsholotsho led to the development of a high-yielding cultivar named Tsholotsho bearded. Improved local cultivars like LC20, LC60 (local collections) were developed through mass selection. Some local accessions were also crossed with exotic introductions, especially the large-grain types from Ghana, to obtain desirable segregants. Field visits to areas where the germplasm is multiplied facilitate the selection of desirable accessions. If the multiplication sites are visited by agricultural planners (Fig. 17), it is easy to convince them of the need to collect and conserve germplasm.

FINGER MILLET

Finger millet is an important traditional food crop of Zimbabwe. It is grown over an estimated 119,495 ha annually (Tattersfield, 1982). It is used for preparing a thick porridge and brewing traditional opaque beer. It had been almost a neglected crop and improvement has only just started. There is practically no finger millet germplasm available and so the collection is being used by the country's agronomy and breeding institutes.

Fig. 16. Different pearl millet spike types collected from Zimbabwe.

Fig. 17. A field visit to an area devoted to growing out millet germplasm at Gwebi; the scientists can make their own selections.

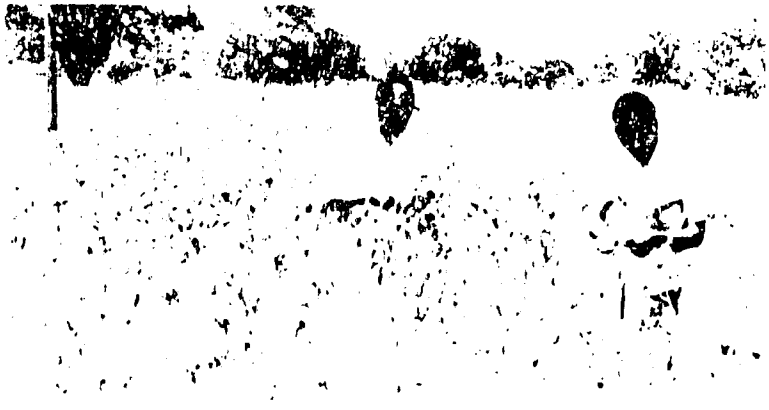

Fig. 18. A field of finger millet again showing that farmers grow different types in a single field.

The descriptors used by Hilu and de Wet (1976) and those used at ICRISAT (Prasada Rao, pers. comm.) were modified and a list of descriptors and descriptor states was developed. Some 235 accessions which had been collected were evaluated at Gwebi and Panmure.

Characterization

At Gwebi each entry was planted in 4 rows, 5 m long, spaced 75 cm apart with 2 replications. Plant were thinned to 5 cm apart within a row.

Variation within samples

Finger millet is usually grown in areas of relatively high rainfall and at higher elevations, usually above 500 m. Farmers usually grow a mixture of different types; they differ in panicle shape, compactness (Fig. 18), flowering and plant height. The farmers have a particular name for each panicle shape . The compact panicle is called 'chifumbata' and the farmers believe that this particular panicle form gives more yield. Some farmers do select a compact panicle form but they say that the other types also appear, probably because of out-crossing.

General variability

Considerable variation was found in panicle shape, compactness, spike number, spike length and grain character (Fig. 19). Usually 5-7 spikes are common but up to 25 spikes were found. The grain is cordate, usually with slight mottles and brown colour. White grain samples were also found, and they are of considerable importance because white grain forms were reported to have high protein content.

Wild and weedy forms

The wild forms of Eleusine are endemic to Zimbabwe. The first archaeological evidence of finger millet came from Inyanga, the eastern hills of Zimbabwe (Summers, 1958). The wild forms of Eleusine are found throughout the highveld and midveld, especially in Masvingo province (Appa Rao and Mushonga, 1985). The wild form is called 'mombe' which means cattle or 'tapoko grass'. The wild forms produce narrow leaf blades, narrow, long spikes with profuse nodal tillering (Fig. 20), and small, dark blue (black), angular seed. Like any other wild form they shatter at maturity. The distribution of wild forms is such that the centre of origin of finger millet should extend to the highlands of Zimbabwe.

Wild forms occur in most finger millet fields, and it is difficult to differentiate between them until flowering. Hence, natural introgression occurs and weedy intermediate forms are found. It is common to see wild, weedy and cultivated forms growing together (Fig. 21) in the same field. The weedy forms are truly intermediate in tillering, spike size, grain size and shattering. Weedy forms are seldom found exclusively in association with the wild forms, but are found in disturbed fields adjacent to cultivated fields. As the weedy forms are usually early maturing, and the seed is relatively larger than that of the wild, some farmers harvest them early for immediate consumption. Farmers eliminate such weedy forms for seed purposes, but they believe that they come from the soil, probably because of shattering.

Fig. 19. Different head types of finger millet.

Fig. 20. Wild Eleusine with profuse tillering and small heads.

Fig. 21. Cultivated, wild and weedy types of finger millet growing together.

Utilization

As the finger millet improvement programme had just started at R&SS, 30 promising accessions were selected and tested in replicated yield trials at Gwebi and Panmure. Contrasting types will be crossed to combine desirable characters from different accessions.

The SADCC/ICRISAT Sorghum and Millet Improvement Program also had decided to start a finger millet improvement scheme. It was proposed to grow all the 235 accessions collected in 1982 and those collected in 1985, at selected locations in SADCC countries (Gupta and Appa Rao, 1985). Besides seed increase, promising types will be selected for testing in SADCC countries.

TABLE 1. PANICLE AND GRAIN CHARACTERS OF SORGHUM LANDRACES COLLECTED FROM ZIMBABWE

See Sorghum Descriptors (IBPGR/ICRISAT, 1980)

TGR	LOCAL NAME	PS	HL	HW	GC	GV	SC	KW	EX	ST	RACE
816	IMPALA	4D	32	7.6	R	2	1	6	corn	A	G
623	FETERITA	5	30	8	W	2	1	7	AC	P	GK
908	CHIFUMBATA	6	27	7.8	M	3	1	3	C	A	K
830	RED SWAZI	5	21	7	R	2	4	5	S	P	C
945	RED SWAZI	6	1.9	6.3	M	3	4	5	S	P	KC
721	RED SWAZI	5	3.2	7.7	M	4	4	5	VS	P	KC
940	FRAMIDA	6	3.0	6.3	M	2	4	7	S	P	C
896	SEGAOLANE	5	28	6.8	S	2	2	8	C	A	KC
947	TSWETA	6	32	7.6	R	3	2	6	C	A	KC
948	TSWETA	6	30	6.3	R	3	2	6	AC	A	K
946	RED SWAZI	5	30	8.8	M	3	4	5	VS	P	C
806	SIKOTAMA	5	23	9.2	M	3	3	7	VS	A	KC
703	IMPALA	5	38	5.1	M	3	5	6	AC	A	KC
709	IMPALA	6	41	7.4	W	4	1	6	AS	P	K
943	TSWETA	6	27	5.2	R	3	5	5	AC	A	D
849	DURAH	7	18	8.5	W	3	1	7	SC	A	D
7p4	CHISÓMBANJE	7	15	5.3	R	3	1	5	C	A	K
942	NKOSIKAZI	6	28	6.7	S	2	2	5	C	A	K
941	NKOSIKAZI		26	5.0	M	2	2	5	C	A	K
860	FRAMIDA	6	24	4.4	M	2	3	7	S	P	KC
587	TSWETA	6	29	5.8	M	2	1	5	C	A	K
944	MALANDISA	5	43	6.0	W	4	1	6	S	A	K
502	SHABANI	7	17	6.8	R	2	2	4	C	A	K

DESCRIPTORS AND DESCRIPTORS STATES (DICTIONARY) OF PASSPORT DATA FOR SORGHUM, PEARL MILLET AND FINGER MILLET

Dictionary for passport descriptors

1 TGR: Collector number
This was assigned by the collectors at the time of collecting the sample. It comprises a 3-letter abbreviation of the names of the collectors T G R (Toll, Gwarazimba and Rao) followed by a number. Since the collector number was serially assigned for all the crops, they are not continuous for a particular crop

2 DATE: Date of collection
The date on which a particular accession was collected, expressed numerically in six digits, (ddmmyy), i.e. 29 April, 1982 is 290482

3 PROV: Province
The 8 provinces in Zimbabwe are abbreviated as:

Masvingo	MSV
Matabeleland north	MTN
Matabeleland south	MTS
Manicaland	MNL
Mashonaland central	MLC
Mashonaland west	MLW
Mashonaland east	MLE
Midlands	MDL

4 TOWN: Nearest town/village
Name of the town or village nearest to the sample site which could be seen on a standard map

5 KM: Distance
Number of kilometres from the nearest town/village to the sample city

6 DR: Direction
The direction of the collecting site from the nearest town or village abbreviated as N (north), S (south), E (East) or W (West), or their combinations

7 LAT: Latitude of site
Latitude of collection site expressed in degrees and minutes (Zimbabwe lies south of the equator) in 4 digits, e.g. 19 53 indicates 19 degrees and 53 minutes

8 LON: Longitude
Longitude of the collection site expressed in degrees and minutes in 4 digits, e.g. 30 51 indicates 30 degrees and 51 minutes. Zimbabwe lies east of the equator.

Dictionary for passport descriptors (continued):

9 ALT: Altitude of site
Elevation of the collection site in metres, above the mean sea level

10 SS: Collection source
Source from which a sample was obtained, and abbreviated as follows:

Wild	1
Farmland	2
Farmstore	3
Backyard	4
Village market	5
Commercial market	6
Institute	7
International Trade Fair	8
Other	9

11 ST: Status of sample
Evolutionary status of the sample coded as follows:

Wild	1
Weedy	2
Breeding line	3
Primitive cultivars	4
Advanced cultivars	5
Other	6

12 LOCAL NAME: The name given by the farmer at the time of collection

13 REMARKS: Additional information about the accession obtained at the time of collecting the sample

TABLE:2 SUMMARY OF PASSPORT DATA OF SORGHUM GERMPLASM COLLECTED FROM ZIMBABWE DURING 1982

TOP	DATE	PROV.	TOWN	NW	DR	LAT		LON		ALT	SS	ST	LOCAL NAME	REMARKS
25	160482	MSE	Mahumbe	5	S	17	33	31	15	1300	2	4		white Grain
38	140482	MSV	Chibi	19	E	20	23	30	40	750	2	2		Weedy
39	140482	MSV	Chibi	19	E	20	23	30	40	750	2	4		sweet-stalk
48	140482	MSV	Chibi	2	E	20	10	30	34	750	3	4		white Grain
59	140482	MSV	Chibi	9	N	20	12	30	26	950	3	4		sweet-stalk
60	140482	MSV	Chibi	9	N	20	12	30	26	950	2	4		Assorted
61	140482	MSV	Chibi	9	N	20	12	30	26	950	2	4	Ngamba	SS60
62	140482	MSV	Chibi	9	N	20	12	30	26	950	2	4	Tsweta	SS60
63	140482	MSV	Chibi	9	N	20	12	30	26	950	2	5	Red Swazi	Beer Type
75	150482	MSV	Gutu	20	NE	19	17	31	17	1180	2	5	Chibuka	Beer Type
85	150482	MSV	Gutu	36	NE	19	32	31	22	1100	2	4		
86	150482	MSV	Gutu	36	NE	19	32	31	28	1100	2	4		Assorted
87	150482	MSV	Gutu	36	NE	19	32	31	25	1100	2	4		SS86
88	150482	MSV	Gutu	36	NE	19	32	31	25	1100	2	4	Chifumbata	SS86
89	150482	MSV	Gutu	36	NE	19	32	31	25	1100	2	4	Machewa	SS86
105	150482	MSV	Gutu	50	E	19	32	31	28	1100	2	4		Assorted
108	150482	MSV	Gutu	50	E	19	36	31	28	1100	2	4		Bold Grain
109	150482	MSV	Gutu	50	E	19	36	31	28	1100	2	4		Red Grain
110	150482	MSV	Gutu	50	E	19	36	31	28	1100	2	4		Brown
111	150482	MSV	Gutu	50	E	19	36	31	28	1100	2	4		White Grain
122	160482	MSV	Bikita	20	N	19	47	31	40	1050	2	4	Tsweta	Red Grain
131	160482	MSV	Bikita	43	E	20	00	31	52	930	2	4	Chetacheyene	White
132	160482	MSV	Bikita	43	E	20	00	31	52	930	2	4	Chetacheyene	White
137	160482	MSV	Magaisa	1	SW	20	24	31	44	650	4	4	Muchaini	Loose head
147	170482	MSV	Magaisa	12	S	20	26	31	51	650	2	4		sweet-stalk
151	170482	MSV	Magaisa	12	S	20	26	31	51	650	2	4		Loose panicle
153	170482	MSV	Magaisa	13	S	20	26	31	52	650	2	4		
154	170482	MSV	Magaisa	13	S	20	26	31	52	650	2	4		
156	170482	MSV	Magaisa	13	S	20	26	31	52	680	2	4		Chalky white
157	170482	MSV	Magaisa	13	S	20	26	31	52	650	2	4	Mutode	Red, compact

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
158	170482	MSV	Magaisa	13	S	20 28	31 52	650	2	4	Muchaini	
159	170482	MSV	Magaisa	13	S	20 28	31 52	650	2	4	Mhando	
161	170482	MSV	Magaisa	13	S	20 26	31 52	650	2	4	Masintiri	
176	190482	MSV	Kyle	7	SE	20 17	31 05	1100	2	4		Uniform
184	190482	MSV	Kyle	27	S	20 25	31 03	800	2	4	Pfumbata	White
186	190482	MSV	Kyle	28	S	20 25	31 03	800	2	4		
191	190482	MSV	Kyle	71	S	20 26	31 09	950	2	4		
195	190482	MSV	Kyle	72	S	20 26	31 09	700	2	4		
196	190482	MSV	Kyle	72	S	20 26	31 09	700	2	4	Mungore	
197	190482	MSV	Kyle	72	S	20 26	31 09	700	2	4		
198	190482	MSV	Kyle	99	S	20 42	31 05	680	2	4	Chibedlani	White grain
199	190482	MSV	Kyle	99	S	20 42	31 05	680	2	4	Pumbata White	
200	190482	MSV	Kyle	99	S	20 42	31 05	680	2	4		
205A	200482	MSV	Lundi	10	SW	20 55	30 43	550	2	4		Loose panicle
205B	200482	MSV	Lundi	10	SW	20 55	30 43	550	2	4		
206	200482	MSV	Lundi	10	SW	20 55	30 43	550	2	4		
210A	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4		
210B	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Rundewda	
210C	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Chivendaw	
210D	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Ngaima	
216A	200482	MSV	Neshuro	65	SW	21 13	30 21	650	3	4	Chifumbata	
216B	200482	MSV	Neshuro	65	S	21 13	30 21	650	3	4	Rundence	Loose
222	200482	MSV	Neshuro	84	S	20 17	30 28	580	3	4	Garireham	sweet-stalk
223A	200482	MSV	Neshuro	84	S	20 17	30 28	580	2	4	Rundence	Loose
223B	200482	MSV	Neshuro	84	S	20 17	30 28	580	2	4	Chitate	Corneous
225A	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4	Mhonda	White
225B	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4	Mhonda	Drought
230	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4	Tsweta	
231	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4	Mutode	Beer type
236A	210482	MSV	Sabi	29	N	20 48	32 11	410	2	4	Muchaini	Loose
236B	210482	MSV	Sabi	29	N	20 48	32 11	410	2	4	Mhonde	
236C	210482	MSV	Sabi	29	N	20 48	32 11	410	2	4	Chikombe	
242	220482	MSV	Malipati	2	E	22 05	31 26	340	3	4	Gangara	
243	220482	MSV	Malipati	3	E	22 05	31 26	340	3	4		
245A	220482	MSV	Malipati	25	N	22 50	31 12	340	3	4		sweet-stalk

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
245B	220482	MSV	Malipati	25	N	22 50	31 12	340	3	4	Gangara	
245C	220482	MSV	Malipati	25	N	22 50	31 12	340	3	4	Chitichi	
245D	220482	MSV	Malipati	25	N	22 50	31 12	340	3	4		sweet-stalk
249A	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Mandhlora	
249B	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Tshalani	
249C	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Red Swazi	
249D	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4		
249E	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Chibendlani	
249F	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4		sweet-stalk
249G	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Gangara	
249H	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4	Chitichi	
249I	220482	MSV	Malipati	54	N	22 41	31 11	400	3	4		sweet-stalk
250A	220482	MSV	Lundi	21	S	21 21	31 47	350	2	4	Gangara	
250B	220482	MSV	Lundi	21	S	21 21	31 47	350	2	4		Loose panicle
257A	230482	MSV	Zaka	36	SE	20 31	31 31	570	3	4		
257B	230482	MSV	Zaka	36	SE	20 31	31 31	570	3	4		
272	260482	MSV	Turgwana	13	S	20 33	30 42	570	2	4	Mungore	Kafir
280A	260482	MSV	Bebijena	6	W	20 36	30 40	750	2	4	Chiponda	Compact
280B	260482	MSV	Bebijena	6	W	20 36	30 40	750	2	4	Vedyana	Large white grain
286	260482	MSV	Bebijena	19	W	20 36	30 40	750	2	4	Vedyana	Large white grain
287A	260482	MSV	Bebijena	19	SW	20 40	30 38	720	2	4	Vedyana	
287B	260482	MSV	Bebijena	19	SW	20 40	30 38	720	2	4	Jayta	
293	260482	MSV	Turgwana	32	S	20 45	30 43	720	2	4	Chibulanye	
333	300482	MSV	Zaka	10	S	20 25	31 25	720	2	4		Weedy
334	300482	MSV	Zaka	10	S	20 25	31 25	720	2	4		
341	300482	MSV	Zaka	23	SW	20 27	31 20	750	2	4		sweet-stalk
351	300482	MSV	Zaka	23	SW	20 27	31 20	750	2	4		sweet-stalk
351A	300482	MSV	Zaka	23	SW	20 27	31 20	720	2	4	Fumbata	Compact
351B	300482	MSV	Zaka	23	SW	20 27	31 20	720	2	4	Rundende	Loose head
354	300482	MSV	Zaka	38	SW	20 28	31 22	850	2	4		sweet-stalk
370	300482	MSV	Zaka	22	N	20 13	31 24	960	3	4		sweet-stalk
371	300482	MSV	Zaka	22	N	20 13	31 24	960	2	4		
378	010582	MLN	Wankie	0		18 35	26 35	900	8	4	Tsweta	
380	010582	MLN	Wankie	0		18 30	26 35	900	8	4	Mayakayaka	
386	010582	MLN	Inyathi	0		18 30	26 35	900	8	4	Tsweta	

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
391	010582	MLN	Wankie	0		18 30	26 35	900	8	4	Malandisa	
392	010582	MLN	Wankie	0		18 30	26 35	900	8	4	Tsweta	
396	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Tsweta	
397	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Chifumbata	
398	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Rutsuturu	
399	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Sibeclane	
410	010582	MLN	Nkayi	0		19 05	28 50	1200	8	4		
411	010582	MLN	Nkayi	0		19 05	28 50	1200	8	4	Impala	
415	010582	MLN	Bulawayo	0		20 10	28 30	1350	8	4	Malandisa	
417	010582	MLN	Nkayi	0		19 05	28 50	1200	8	4	Impala	
423	010582	MDL	Chilimanzi	0		19 40	30 45	1400	8	4		
428	010582	MDL	Chilimanzi	0		19 40	30 45	1400	8	4		
430	010582	MLW	Plumtree	0		20 30	27 45	1400	8	4	Tsweta	
434	010582	MLN	Binga	0		20 35	30 01	1050	8	4		
441	010582	MDL	Belingwe	0		20 35	30 01	1060	8	4		
442	010582	MDL	Belingwe	0		20 35	30 01	1060	8	4	Tsweta	
443	010582	MLW	Tsholotsho	0		19 50	27 45	1050	8	4	Tsweta	
447	010582	MLW	Tsholotsho	0		19 50	27 45	1050	8	4	Malandisa	
448	010582	MLW	Tsholotsho	0		19 50	27 45	1050	8	4	Segobane	
449	010582	MLW	Tsholotsho	0		19 50	27 45	1050	8	4	Gwusi	
455	010582	MLN	Lupane	0		18 50	27 50	1050	8	4	Isifumbata	
456	010582	MLN	Lupane	0		18 50	27 50	1050	8	4	Tsweta	
457	010582	MLN	Lupane	0		18 50	27 50	1050	8	4	Udayakayaka	
466	010582	MDL	Shurugwi	0		19 45	30 00	1450	8	4	Chibuku	
467	010582	MDL	Shurugwi	0		19 45	30 00	1450	8	4	Tsweta	
479	010582	MLN	Mkubazi	0		19 40	27 40	1050	8	4		
480	010582	MLN	Mkubazi	0		19 40	27 40	1050	8	4		
487	010582	MNL	Gata Camp	1	E	20 03	32 52	700	4	4	Chikota	Primitive
494	050582	MNL	Gata Camp	2	E	20 03	32 53	700	1	1		Wild
497A	050582	MNL	Gata Camp	3	E	20 05	32 54	700	2	4	Mungonellengo	Loose panicle
498	050582	MNL	Gata Camp	3	E	20 05	32 54	700	2	4	Mungonellengo	Loose panicle
499	050582	MNL	Gata Camp	3	E	20 05	32 54	700	2	4	Mungonellengo	Loose panicle
500	050582	MNL	Gata Camp	3	E	20 05	32 54	700	2	4	Mungonellengo	Loose panicle
501	050582	MNL	Gata camp	4	E	20 04	32 47	700	2	4	Chikota	Goose neck
505	050582	MNL	Gata camp	4	E	20 04	32 47	700	2	4	Chikota	
505A	050582	MNL	Gata camp	7	S	20 04	32 50	750	2	4	Chikota	Goose neck

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
505B	050582	MNL	Gata camp	7	S	20 04	32 50	750	2	4	Gwengwere	Compact head
517	050582	MNL	Rusitu	1	E	20 05	32 52	1000	4	4		Compact head
523	060582	MNL	Rusitu	5	E	20 01	32 55	980	2	4	Chikota	
527	060582	MNL	Risitu	13	E	20 01	32 57	1020	3	4	Chikota	Goose neck
536	060582	MNL	Muchira	1	E	20 02	32 55	840	2	4	Chikota	
546	070582	MNL	Mhedziwe	2	W	19 33	32 34	1030	4	4	Zangewaya	
547	070582	MNL	Mhedziwe	2	W	19 33	32 34	1030	4	1		Shattering
548	070582	MNL	Mhedziwe	2	W	19 33	32 34	1030	4	4		
556A	070582	MNL	Mhedziwe	5	W	19 34	32 37	1050	3	4	Tsweta	Red Kafir
556B	070582	MNL	Mhedziwe	5	W	19 34	32 37	1050	3	4	Dewe	White Kafir
558	070582	MNL	Mhedziwe	5	W	19 39	32 37	1050	2	2	Mururu	
565A	070582	MNL	Wengezi	41	SE	19 44	32 34	780	3	4	Tsweta	Red Kafir
565B	070582	MNL	Wengezi	41	SE	19 44	32 34	780	3	4	Chimondo	White Kafir
565C	070582	MNL	Wendimi	41	SE	19 44	32 34	780	3	4		Inter kafir
572	080582	MNL	Chikukwa	3	E	19 41	32 57	1500	2	4	Chikota	Resist bird
577A	080582	MNL	Chikukwa	1	N	19 42	32 56	1200	2	4	Chikota	
577B	080582	MNL	Chikukwa	1	N	19 42	32 56	1200	2	4	Tsweta	
587	100582	MNL	Tamandayi	2	NE	20 18	32 49	700	3	4	Chimutode	
609	100582	MNL	Tamandayi	2	S	20 15	32 49	700	4	4	Chikombe	
610	100582	MNL	Tamandayi	2	S	20 18	32 49	700	4	4	Chikota	
617	100582	MNL	Tamandayi	13	SW	20 21	32 45	1200	2	4	Gangara	
627	100582	MNL	Tamandayi	18	SW	20 22	32 46	900	3	4		sweet-stalk
633	110582	MNL	Mt Selinda	2	S	20 26	32 43	980	3	4		Seeet stalk
635	110582	MNL	Mt Selinda	4	S	20 26	32 44	900	2	4	Red Swazi	Introgressed
640	110582	MNL	Mt Selinda	8	S	20 26	32 45	860	2	4	Gangara	
653	110582	MNL	Mt Selinda	8	S	20 26	32 45	860	3	4		
663	170582	MDL	X Roads	25	W	18 53	29 07	1000	3	4		sweet-stalk
694	180582	MDL	Zhombe	23	E	18 47	29 26	1150	3	4	Maboyana	sweet-stalk
705	180582	MDL	Zhombe	1	E	18 40	29 22	1130	3	4	Matserendende	Resist birds
706	180582	MDL	Zhombe	1	E	18 40	29 22	1130	3	4	Mavoyana	sweet-stalk
707	180582	MDL	Zhombe	1	E	18 40	29 22	1130	3	4	Bedhlana	sweet-stalk
708	180582	MDL	Zhombe	1	E	18 40	29 22	1130	3	4	Umkumbe	sweet-stalk
714	180582	MDL	Zhombe	5	S	18 41	29 19	1180	3	4	Tsweta	
720	180582	MDL	Zhombe	28	N	18 35	29 25	1080	3	4	Tsweta	
733	180582	MDL	Zhombe	28	N	18 35	29 25	1080	3	4		sweet-stalk
738	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Ngumane	Compact head

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
738A	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Ngumane	Compact head
738B	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Ngumane	Semi compact
738C	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Ngumane	Dark glumes
738D	190582	MDL	St Joseph	5	E	19 45	30 37	1150	3	4	Murara	Loose head
738E	190582	MDL	St Joseph	5	E	19 45	30 37	1150	3	4		Compact head
738F	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Tsweta	Red Kafir
738G	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4		sweet-stalk
738H	190582	MDL	St Joseph	5	E	19 45	30 37	1150	3	4	Chikrochani	
738I	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Chifumbata	
753	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4	Tsweta	
755	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4	Chifumbata	
759	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4	Chifumbata	Compact, Kafir
771	200582	MDL	St School	1	N	18 54	31 02	1490	3	4		sweet-stalk
800	200582	MDL	Sadza	0	O	18 53	31 24	1470	3	4	Tsweta	
824	200582	MDL	Sadza	0	O	18 53	31 24	1470	3	4	Tsweta	White grain
840A	210582	MDL	Gokwe	35	W	18 15	28 24	1100	3	4		White grain
840B	210582	MDL	Gokwe	35	W	18 15	28 24	1100	3	4		Red grain
866	220582	MDL	Manyoni	10	W	18 10	28 34	1100	3	4		sweet-stalk
877	220582	MDL	Manyoni	4	S	18 12	28 36	1100	3	4		sweet-stalk
885	220582	MDL	Manyoni	14	W	18 08	28 39	1120	3	4		sweet-stalk
902	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		sweet-stalk
903	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		Loose panicle
907	240582	MDL	Mkoba	26	W	19 16	29 28	1300	3	4	Tsweta	Mixed seed
979	260582	MDL	Sadza	4	E	18 53	31 24	1420	3	4		Compact
980	260582	MDL	Sadza	4	E	18 24	31 24	1420	3	4		
990	260582	MDL	Mupatso	5		19 02	31 28	1200	3	4	Rudebare	
1052	260582	MDL	Mupatso	5		19 02	31 28	1200	3	4	Rudebare	
1066	260582	MDL	Dowga	36	NE	19 53	30 16	1200	3	4		sweet-stalk
1086	260582	MDL	Wankie	19	SE	19 44	30 16	1200	3	4		sweet-stalk
1092	270582	MDL	Masvingo	3	NE	20 38	30 23	780	3	4	Chibedyane	
1093	270582	MDL	Masvingo	3	NE	20 38	30 23	780	3	4	Muise	Sweet-stalk
1095	270582	MDL	Masvingo	4	SW	20 45	30 20	750	3	4	Sosoti	
1103	270582	MSV	Masvingo	3	W	20 48	30 22	880	3	4	Gangare	
1104	270582	MSV	Masvingo	8	SE	20 42	30 22	850	3	4	Chifumbata	Compact
1111	270582	MSV	Masvingo	11	S	20 42	30 21	850	3	4	Tsweta	Red, Kafir

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1112	270582	MSV	Masvingo	11	S	20 42	30 21	850	3	4	Rushutura	White, Kafir
1116	270582	MDL	Mataka	1	W	20 51	30 11	760	3	4	Chivedyana	White, Kafir
1123	270582	MDL	Mataka	1	W	20 51	30 31	760	3	4	Chivedyana	
1124	270582	MDL	Mataka	1	W	20 51	30 31	760	3	4	Tsweta	
1125	270582	MDL	Mataka	1	W	20 51	30 31	760	3	4	Chifumbata	
1126	270582	MDL	Mataka	1	W	20 51	30 31	760	3	4	Rundunde	
1127	270582	MDL	Mataka	1	W	20 51	30 31	760	3	4	Chitate	
1146	270582	MDL	Maranda	0		20 44	30 12	850	3	4		sweet-stalk
1147	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4	Gangara	
1158	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4	Chifumbata	
1158A	280582	MDL	Zurubi	7	SN	20 26	30 17	850	3	4	Chifumbata	
1158B	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4	Tsweta	
1163	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4	Rusutura	
1172	280582	MDL	Zvishavane	23	N	20 08	29 57	1050	3	4	Rugare	sweet-stalk
1174	280582	MDL	Zvishavane	23	N	20 08	29 57	1050	3	5		
1204	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4	Tswedani	kafir
1204A	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4	Tswedani	Kafir
1204B	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4		white corneous
1204C	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4		chalky white
1204D	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4		white glumes
1206	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4	Rundende	
1208	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4		sweet-stalk
1209	010682	MDL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4	Tswedani	Red Kafir
1224	010682	MDL	Mutungagore	0		18 50	32 03	1100	3	4		
1230	020682	MNL	Nyatate	4	E	18 01	32 39	1190	3	4	Tsenhe	
1234	020682	MNL	Nyatate	2	W	18 01	32 39	1190	3	4		
1235	020682	MNL	Nyatate	2	W	18 01	32 39	1190	3	4	Mutanda	
1258	030682	MNL	Nyaruaka	1	NW	17 52	32 57	800	3	4		sweet-stalk
1263	030682	MNL	Nyanghomba	1	SW	17 47	32 57	800	3	4		
1269	030682	MNL	Nyanghomba	1	SW	17 47	32 57	800	3	4		sweet-stalk
1278	030682	MNL	Kude	0		17 54	32 52	900	3	4	Bimbe	Caudatum
1287	030682	MNL	Nyamhuru	0		17 52	32 55	1200	3	4		
1306	070682	MNL	Honde	0		18 34	32 48	850	3	4	Mukasuki	sweet-stalk
1307	070682	MNL	Honde	0		18 34	32 48	850	3	4	Mukasuki	sweet-stalk
1317	070682	MNL	Honde	0		18 34	32 45	850	3	4	Mabumbe	Caudatum

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1322	070682	MNL	Honde	0		18 34	32 45	850	3	4	Nzende	Resist bird
1325	070682	MNL	Honde	5	E	18 36	34 46	900	3	4	Bimba	Goose neck
1333	070682	MNL	Honde	4	NE	18 36	34 46	900	3	4		
1341	070682	MNL	Honde	4	NE	18 36	34 46	900	3	4		White grain
1347A	070682	MNL	Honde	4	E	18 36	34 46	900	3	4	Bumbi	
1347B	070682	MNL	Honc	4	E	18 36	34 46	900	3	4		
1347C	070682	MNL	Honde	4	E	18 36	34 46	900	3	4		
1347D	070682	MNL	Honde	4	E	18 36	34 46	900	3	4		
1347E	070682	MNL	Honde	4	E	18 36	34 46	900	3	4		
1358	07082	MNL	Gatsi	2	W	18 31	32 44	820	3	4		
1372	070682	MNL	Hauna	1	W	18 30	32 50	800	3	4		sweet-stalk
1382	070682	MNL	Mparutsa	3	NE	18 27	32 48	800	3	4	Mayere	
1384	070682	MNL	Mparutsa	3	NE	18 27	32 48	800	3	4	Mayere	
1385	070682	MNL	Mparutsa	3	NE	18 27	32 48	800	3	4		
1402	080682	MNL	Mandeya	10	E	18 27	32 58	750	3	4		Kafir
1406	080682	MNL	Mandeya	10	E	18 27	32 58	750	3	4		
1423	090682	MNL	Machona	4	NE	20 52	32 13	400	3	4	Mutode	Kafir
1435	090682	MNL	Machona	4	NE	20 52	32 13	400	3	4		sweet-stalk
1444	090682	MNL	Chimyamkwak	7	N	20 51	32 16	400	3	4	Mutode	
1448	090682	MNL	Chimyamkwak	7	N	20 51	32 16	400	3	4		
1460	110682	MNL	Changazi	0		19 58	32 25	610	3	4		
1481	100682	MNL	Hombwe	0		17 41	29 45	900	3	4		sweet-stalk
1482	150682	MLW	Hombwe	0		17 41	29 45	900	3	4		
1501	150682	MNW	Strupert	1	NE	17 45	29 43	900	3	4		sweet-stalk
1503	150682	MLW	Chifuwamuti	0		17 46	29 29	1000	3	4		sweet-stalk
1516	160682	MLW	Kenzamba	10	SE	17 36	29 32	1000	3	4		sweet-stalk
1521	160682	MLW	Mapfungwe	1	N	17 33	29 38	880	3	4		sweet-stalk
1535	160682	MLW	Kenzamba	1	W	17 27	29 35	900	3	4		sweet-stalk
1537	160682	MLW	Nyare	0		17 26	29 31	900	3	4		
1543	160682	MLW	Nyare	0		17 26	29 31	900	3	4		sweet-stalk
1544	160682	MLW	Nyare	0		17 26	29 31	900	3	4		sweet-stalk
1546	160682	MLW	Obua	0		17 33	29 29	850	3	4	Rongwe	
1552	160682	MLW	Obua	0		17 33	29 29	850	3	4		sweet-stalk
1556	180682	MLW	Murombedzi	15	N	17 37	30 11	1200	3	4		
1574	180682	MLW	Chivhere	0		17 39	30 02	1100	3	4	Kanzwonwo	

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1575	180682	MLW	Murindagomo	0		17 43	30 07	1200	3	4		
1605	180682	MLW	Madzima	0		17 46	30 17	1300	3	4		sweet-stalk
1616	210682	MLW	Magunje	8	SW	16 51	29 23	1100	3	4	Huse	Chalky white
1622	210682	MLW	Magunje	0		16 56	29 23	1100	3	4		Kafir
1625	210682	MLW	Magunje	20	SW	16 52	29 24	1200	3	4	Musoso	
1635	210682	MLW	Magunje	1	N	16 47	29 25	1180	3	4		sweet-stalk
1636	210682	MLW	Magunje	1	N	16 47	29 25	1180	3	4		sweet-stalk
1642	210682	MLW	Magunje	12	NW	16 46	29 24	1100	3	4		sweet-stalk
1643	210682	MLW	Magunje	12	NW	16 46	29 24	1100	3	4		sweet-stalk
1673	220682	MLW	Samuriwo	14	S	17 07	29 20	1100	3	4	Chimhondoro	sweet-stalk
1680	220682	MLW	Mujaga	0		17 11	29 24	1100	3	4		
1690	220682	MLW	Chimusimbe	3	E	17 10	29 29	1100	3	4	Rongwe	Chalky white
1691	220682	MLW	Chimusimbe	3	E	17 10	29 29	1100	3	4	Chinzetu	Red, caudatum
1694	220682	MLW	Chimusimbe	4	N	17 09	29 29	1100	3	4		
1697	220682	MLW	Chimusimbe	4	N	17 09	29 29	1100	3	4	Rongwe	Chalky white
1702	230682	MLW	Chitake	4	NE	16 24	29 30	1200	3	4	Nzetu	Kafir
1704	230682	MLW	Chitake	4	NE	16 24	29 30	1200	3	4	Nzetu	Kafir
1705	230682	MLW	Chitake	4	NE	16 24	29 36	1200	3	4		Kafir
1706	230682	MLW	Chitake	4	NE	16 24	29 36	1200	3	4		Kafir
1722	230682	MLW	Chitake	14	E	16 24	29 41	1100	3	4		Kafir
1726	230682	MLW	Chitake	1	E	16 22	29 45	1100	3	4		Kafir
1734	230682	MLW	Mhondiwa	4	E	16 28	29 29	1200	3	4		Caudatum
1735	230682	MLW	Mhondiwa	4	E	16 28	29 39	1200	3	4		sweet-stalk
1736	230682	MLW	Mhondiwa	4	E	16 28	29 39	1200	3	4		sweet-stalk
1745	240682	MLW	Kadunga	11	W	16 36	29 46	1200	3	4	Musoso	Bold red
1746	240682	MLW	Kadunga	11	W	16 36	29 46	1200	3	4	Nzetu	Loose head
1757	240682	MLW	Kadunga	11	W	16 36	29 46	1200	3	4		Kafir
1761	240682	MLW	Kadunga	14	N	16 29	29 53	1100	3	4		sweet-stalk
1764	240682	MLW	Kadunga	14	N	16 29	29 53	1100	3	4	Chiota	Goose neck
1768	240682	MLW	Kadunga	6	E	16 32	29 53	1100	3	4		
1775	240682	MLW	Kadunga	7	S	16 25	29 51	1100	3	4		Chalky white
1789	240682	MLW	Kadunga	21	E	16 36	29 56	1100	3	4		Kafir
1796	240682	MLW	Miami	9	E	16 40	29 50	1100	3	4		Kafir
1813	290682	MLW	Manbenza	2	E	17 23	31 20	1150	3	4		
1835	300682	MLC	Madziva	6	E	16 59	31 31	1020	2	2		Weedy shattering

TCR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1838	300682	MLC	Madziva	6	E	16 59	31 31	1020	3	4		Chalky white
1846	300682	MLC	Chakonda	4	N	17 07	31 36	950	3	4		sweet-stalk
1850	300682	MLC	Chakonda	4	N	17 07	31 36	950	3	4	Chikondoma	Loose head
1851	300682	MLC	Chashapa	0		17 13	31 37	1100	3	4	Chiunda	Resist bird
1856	300682	MLC	Madziva	10	E	16 56	31 33	10 50	2	2		mêecy
1859	300682	MLC	Madziva	10	E	16 56	31 33	1050	2	2		
1862	300682	MLC	Madziva	8	SW	16 54	31 54	1110	3	4		
1878	010782	MLC	Nyawa	0		16 35	32 10	1000	3	4	Mashava	white kafir
1888	010782	MLC	Nyawa	9	N	16 35	32 11	1000	3	4		kafir
1896	010782	MLC	Nkonda	1	W	16 37	32 11	750	3	4		
1901	010782	MLC	Mary	8	E	16 37	32 26	680	3	4		Kafir
1909	010782	MLC	Mary	23	W	16 40	13 14	680	3	4		Compact head
1918A	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4	Mashava	White, Kafir
1918B	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4	Kabhurwayo	
1918C	[illegible]	MLC	Mukumbura	0		16 12	31 42	450	3	4		kafir
1918D	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4	Kabhurwayo	
1929	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4		
1929A	020782	MLC	Mukumbura	13	S	16 20	31 45	530	3	4		Chalky white
1929B	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4		Corneous white
1931	020782	MLC	Mukumbura	16	SE	16 21	31 46	580	1	1		wild
1934	020782	MLC	Mukumbura	29	SE	16 29	31 49	900	3	4		Chalky white
1943	030782	MLC	Handerson	3	W	16 37	31 49	900	3	4		sweet-stalk
1946	030782	MLC	Chitsato	0		16 34	31 46	880	3	4	Chikondoma	Resist bird
1955	030782	MLC	Chawanda	2	E	16 37	31 45	980	3	4		
1965	030782	MLC	Chawanda	2	E	16 37	31 45	980	3	4	Chikondoma	
1966	030782	MLC	Chawanda	2	E	16 37	31 45	980	3	4	Mashava	
1987	040782	MLC	Dotito	1	W	16 34	31 34	990	3	4	Chikondoma	Resist bird
1999	040782	MLC	Dotito	14	W	16 31	31 28	1120	3	4	Chikondoma	
2004	040782	MLC	St Albert	10	E	16 29	31 21	1200	3	4	Chikondoma	Kafir
2009	040782	MLC	Mzarabani	1	N	16 22	31 01	410	3	4		
2015	060782	MLC	Mzarabani	3	NE	16 18	31 05	400	3	4		
2016	060782	MLC	Mzarabani	25	NE	16 18	31 05	400	3	4		Early
2021	060782	MLC	Hoya	0		16 20	31 02	410	3	4		Caudatum
2026	060782	MLC	Musengedzi	9	E	16 07	31 06	300	3	4		Loose head
2031	060782	MLC	Masomo	2	W	16 17	30 25	400	3	4		white seed

TGR	DATE	PROV	TOWN	RW	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
2034	060782	MLC	Masomo	1	W	16 17	30 35	400	3	4		Sweet-stalk
2036	070782	MLC	Chitsungo	1	E	16 16	30 28	400	3	4	Loose head	
2042	070782	MLC	Chitsungo	1	E	16 16	30 28	400	3	4	Compact head	
2043	070782	MLC	Angwa	9	W	16 03	30 18	400	3	4		Chalky white
2043B	070782	MLC	Angwa	9	W	16 03	30 18	400	3	4		Red grain
2043C	070782	MLC	Angwa	9	W	16 03	30 18	400	3	4		Loose panicle
2043D	070782	MLC	Angwa	9	W	16 03	30 18	400	3	4		Corneous white
2043E	070782	MLC	Angwa	9	W	16 03	30 18	400	3	4		Red compact
2052	070782	MLC	Chabto	0		16 44	30 23	320	3	4	Mbwende	Kafir
2054	070782	MLC	Angwa	18	W	16 12	30 17	400	3	4	Matipa	
2055	070782	MLC	Angwa	18	W	16 12	30 17	400	3	4	Matipa	
2056	070782	MLC	Angwa	18	W	16 12	30 17	400	3	4	Matipa	
2056A	070782	MLC	Angwa	18	W	16 12	30 17	400	3	4		Caudatum
2056B	070782	MLC	Angwa	18	W	16 12	30 17	400	3	4		Kafir
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16 43	[illegible]	[illegible]	3	4	[illegible]	Loose head
2063B	080782	MLC	Sipolilo	9	S	16 43	30 46	1300	3	4		Compact head
2064	080782	MLC	Sipolilo	9	S	16 43	30 46	1300	3	4		Compact head
2068A	080782	MLC	Sipolilo	10	W	16 42	30 39	1200	3	4	Mososo	Chalky white
2068B	080782	MLC	Sipolilo	10	W	16 42	30 39	1200	3	4	Chikondoma	Caudatum
2069	080782	MLC	Sipolilo	10	W	16 42	30 39	1200	3	4		Sweet-stalk
2074A	080782	MLC	Sipolilo	2	W	1642	30 39	1200	3	4	Musoso	Loose head
2075	080782	MLC	Kachota	11	E	16 33	30 33	1140	4	4		Resist bird
2076	080782	MLC	Kachota	3	E	16 32	30 30	1100	3	4		Kafir
2082	090782	MLC	Macombwe	8	S	17 00	31 05	1200	3	4	Hota	
2090	090782	MLC	Macombwe	16	N	17 50	31 10	1200	3	4		K. caudatum
2095	090782	MLC	Chadona	4	S	17 47	31 15	1100	3	4		K. caudatum
2097	090782	MLC	Chambira	0		17 04	31 12	1250	2	2		Weedy
2100	110782	MNL	Musani	4	N	20 03	32 26	700	3	4		
2101	110782	MNL	Berchenough	14	S	20 04	32 21	500	3	4	Dere	

DESCRIPTORS AND DESCRIPTOR STATES FOR SORGHUM GERMPLASM EVALUATION

1 TGR: Collectors number assigned to the samples at the time of collecting

2 PC: Plant colour at Harvesting
- P Pigmented
- T Tan

3 MC: Leaf Midrib Colour
- C Colourless (white)
- D Dull
- Y Yellow
- B Brown

4 SJ: Stalk Juiciness
- J Juicy
- D Dry

5 JQ: Juice Quality
- S Sweet
- I Insipid

6 LD: Lodging
- 1 0 - 10% of the plants lodged
- 2 11 - 25% of the plants lodged
- 3 26 - 50% of the plants lodged
- 4 51 - 75% of the plants lodged
- 5 76 - 100% of the plants lodged

7 SN: Synchrony of Flowering
Whether the main stem and tillers flower at the same time or not
- S synchronous
- N non synchronous

8 EN: Head Exsertion
- 1 well exserted, more than 10 cm between ligule of the flag leaf to head base
- 2 exsertion 2 cm to 10 cm between ligule of flag leaf to head base
- 3 less than 2 cm but ligule definitely below the head base
- 4 peduncle recurved but head is below the ligule and clearly exposed splitting the leaf sheath
- 5 head covered by the leaf sheath

9 PS: Head Compactness and Shape

1 very lax panicle, typical of wild sorghum
2E very loose erect primary branches
2D very loose drooping primary branches
3E loose erect primary branches
4E semi loose drooping primary branches
5 semi compact elliptic
6 compact elliptic
7 compact oval
8 half broom corn
9 broom corn

10 ST: Shattering

1 non shattering
2 moderately shattering
3 completely shattering

11 TS: Threshability

The effectiveness of removing the grain by threshing expressed as

1 freely threshable (0 - 1% unthreshed kernal)
2 almost freely threshable (2 - 10% unthreshed kernal)
3 partly threshable (11 - 25% unthreshed kernel)
4 difficult to thresh (26 - 50% unthreshed)
5 difficult to thresh (more than 50% unthreshed kernel)

12 GC: Glume Colour

W white
S sienna (yellow)
M mahogany (brown)
R red
P purple
B black
G grey

13 GV: Kernel Covering

Amount of kernel covered by the glume

1 grain uncovered
2 25% of grain covered
3 50% of grain covered
4 75% of grain covered

14 SC: Kernel Colour

1 white
2 yellow
3 red
4 brown
5 buff

15 BD: Bird Damage
Visually scored on 1-9 scale
3 no damage
5 50% damage
7 75% damage

16 PA: Overall Plant Aspect
Overall agronomic desirability of the accession as observed visually
1 very good
2 good
3 average
4 below average
5 poor

17 EV: Early Vigour
Recorded 24 days after field emergence
1 very good
2 good
3 average
4 below average
5 poor

18 FL: Days to 50% flowering
Number of days from mean emergence date of the field to the date when 50% of the plants in the plot start flowering

19 HT: Plant Height
Mean height of the main stalk measured after 50% flowering in cm based on 10 randomly chosen plants

20 HL: Head Length
Mean length from the base of the head to the tip in cm based on five randomly chosen plants

21 HW: Head Width
Width of panicle in natural position at the widest part of the head in cm based on the width of heads from five randomly chosen plants

22 PT: No. of productive tillers
The number of spikes which bear seed at the time of maturity and therefore contribute to yield

23 KW: Kernel weight
Visually scored on 1-9 scale
3 small (size of Chisumbanje)
5 average (DC75)
7 large

24 EX: Endosperm Texture
Visually scored
1 completely corneous
2 almost corneous
3 partly corneous
4 almost starchy
5 completely starchy

25 EC: Endosperm Colour
1 white
2 yellow

26 ET: Endosperm Type
1 normal
2 waxy
3 sugary

27 KL: Kernel Lustre
L lustre
N non lustrous

28 ST: Sub coat
A absent
P present

29 KP: Kernel Plumpness
D dimple
P plump

TABLE 3: EVALUATION DATA OF SORGHUM GERMPLASM COLLECTED DURING 1980, AND EVALUATED AT GWEBI, PLANTED ON 12-12-1984

TCR	PC	MC	SJ	JC	LC	SN	EN	PS	ST	TS	GC	GV	SC	BC	PA	EV	PL	HT	HL	HW	PT	KW	EX	ED	ET	KL	ST	KP
122	T	C	D	I	1	S	1	4E	1	1	S	2	1	5	4	3	80	29	20	6	2	4	2	1	2	2	1	2
131	T	C	D	I	1	S	1	4E	1	2	S	3	1	4	3	2	82	30	21	4	1	4	2	1	2	2	1	2
132	T	C	D	I	1	S	2	3D	1	1	R	2	1	5	3	2	75	29	22	6	2	6	3	1	2	2	2	2
137	T	C	D	I	1	S	2	2D	1	2	W	2	1	4	3	4	82	31	23	6	3							
147	T	D	J	S	1	N	2	4D	1	2	B	3			2	3	83	26	29	6	2	2	4	1	2	2	2	2
151	T	C	J	S	1	N	3	3D	1	3	R	4		2	2	3	84	2	24	4	3	6	4	1	2	2	1	2
153	T	C	D	I	1	N	1	2D							3	3	77	29	23	6	3	6	4	1	2	2	1	2
154	T	C	D	I	1	N	1	2D	1	2	5	3		2	3	4	76	32	23	7	5	5	3	1	2	2	1	2
156	T	C	D	I	1	S	1	4E	1	2	B	2		2	4	2	61	18	21	6	3	6	3	1	2	2	1	2
157	T	D	D	I	1	S	1	6	1	3	P	2		2	2	2	83	26	17	4	1	4	3	1	2	2	1	2
158	T	C	D	I	1	N	2	2D	1	1	B	1		2	2	3	81	30	23	6	2	2	1	1	2	2	1	2
159	P	D	D	I	1	S	3	6	1	2	R	3		4	2	3	83	26	14	5	1	6	4	1	2	2	1	1
161	T	C	D	I	1	S	2	6	1	3	B	3		2	2	3	83	26	21	4	2	2	1	1	1	1	1	2
176	T	C	D	I	1	S	3	2D							3	4	97	30	14	4	2	2	2	1	2	2	1	2
184	T	C	D	I	1	S	3	6	1	3	S	3		8	2	3	95	27	18	4	2							
186	T	C	J	S	1	S	2	2D	1	3	B	4		2	3	4	89	32	24	4	3	4	3	1	2	2	2	1
191	T	C	D	I	1	N	3	6	1	2	R	3		5	3	3	81	26	19	5	2	5	4	1	2	2	1	2
195	Y	C	D	I	1	S	2	4D	1	2	B	3		2	4	3	80	27	19	5	2	2	2	1	2	2	1	2
196	T	C	D	I	1	N	2	2D	1	2	R	3		7	2	5	87	32	32	4	4	3	4	1	2	2	1	2
197	T	C	D	I	1	N	1	6	1	3	N	3		6	3	3	88	29	19	4	2	5	4	1	2	2	1	2
198	P	C	D	I	1	N	3	6	1	3	S	3		7	2	3	87	26	19	5	2	3	5	1	2	2	1	2
199	T	C	D	I	1	N	2	2D	1	1	Y	1		7	4	3	82	33	28	5	4	4	2	1	2	1	1	2
200	T	C	D	I	1	S	2	2D	1	1	R	2		2	3	3	78	30	18	6	2	3	1	1	2	1	1	2
205A	T	C	D	I	1	S	3	2D	1	1	S	1		2	3	3	82	31	24	6	3	3	2	1	2	1	1	2
205B	T	C	D	I	1	S	3	6	1	3	W	4		7	2	3	86	27	16	4	3	3	3	2	2	1	1	2
206	T	C	D	I	1	S	2	2D	1	1	S	2		5	3	3	78	31	26	7	3	4	2	1	2	1	1	2
210A	P	C	D	I	1	N	2	3D	1	1	M	1		6	3	3	78	31	25	6	3	3	2	1	1	1	1	2
210B	T	C	D	I	1	N	3	3E	1	2	B	2		5	3	3	79	32	24	6	4	3	4	1	2	2	2	1
210C	T	C	D	I	1	N	3	6	1	2	R	3		6	2	2	83	26	12	4	2	3	3	1	2	2	2	2
210D	T	C	D	I	1	N	2	6	1	3	R	3		6	2	2	83	32	23	5	2	5	4	1	2	2	2	2

TGR	PO	MO	SJ	JC	LC	SN	EN	PS	ST	TS	GO	DN	SO	BO	PA	EV	PL	HT	HL	HM	FT	HW	EN	LO	ET	HL	ST	KP
216A	T	Y	J	S	1	S	3	5	1	2	R	3	1	6	2	3	61	26	16	4	3	4	4	1	2	1	1	2
216B	T	C	D	I	1	N	3	3E	1	1	P	1	1	3	3	2	75	32	22	7	3	1	2	1	4	1	1	2
223A	T	C	D	I	1	N	2	3E	1	2	P	2	1	5	4	1	80	31	19	7	2	3	2	1	1	1	1	2
223B	T	C	D	I	1	S	3	6	1	2	M	3	1	4	3	3	83	27	18	5	1	4	3	1	2	1	1	2
225A	T	P	J	S	1	S	3	6	1	1	R	2	1	5	2	3	85	24	17	4	1	4	3	1	2	1	1	2
225B	T	C	J	S	1	S	3	6					1	4	2	2	87	24	15	4	1							
230	T	C	D	I	1	S	3	5	1	3	R	3	3	2	4	2	85	28	16	4	1	3	3	1	2	1	1	2
231	T	C	J	S	1	S	2	6	1	1	R	3	3	2	2	3	83	28	18	4	2	2	4	1	2	1	1	2
236A	P	C	D	I	1	S	2	2D	1	1	S	1	1	2	4	2	73	29	26	7	3	4	1	1	1	1	1	2
236B	T	C	D	I	1	S	2	6	1	2	P	3	1	4	4	4	84	27	16	4	2	2	2	1	1	1	1	2
236C	P	C	D	I	1	S	1	3E	1	2	P	4	5	2	5	3	63	25	17	4	2	2	4	1	2	1	2	2
242	T	C	D	I	1	N	2	6	1	3	R	3	3	2	4	3	84	28	19	4	2	3	3	1	2	2	2	2
243	T	C	D	I	1	N	1	6	1	2	R	3	3	2	5	3	84	28	18	4	3	3	4	1	2	1	1	2
250A	T	C	D	I	1	N	1	6	1	2	R	4	5	2	4	3	84	27	16	4	2	3	4	1	2	1	1	2
250B	T	C	D	I	2	S	1	3D	1	2	P	3		2	5	2	70	24	17	5	2	5	4	1	2	2	2	2
257A	T	C	J	S	1	S	3	3E	1	2	R	4	2	2	3	3	96	26	21	6	2	3	4	1	2	2	1	2
257B	T	C	D	I	1	S	1	4E		1	W	3	1	6	5	3	82	19	23	4	2	0	4	1	2	2	1	3
272	P	D	J	S	1	S	3	4E	1	4	M	4	2	2	5	2	86	27	18	6	1	5	4	1	2	2	2	2
280A	T	C	D	I	1	S	3	6	1	3	S	3	1	2	5	3	94	25	17	5	2	5	3	1	2	1	1	2
280B	T	C	D	I	1	S	1	4E	1	3	G	3	1	7	4	1	83	31	21	3	2	5	3	1	2	1	1	2
286	T	C	D	I	1	S	2	6	1	3	W	3	1	6	5	4	92	26	12	4	2	2	2	1	2	1	1	2
287A	P	C	D	I	1	S	3	5	1	2	B	3	1	6	4	3	83	27	16	4	1	4	2	1	1	1	1	2
287B	T	C	D	I	1	S	3	6	1	3	P	3	4	6	4	2	83	28	17	4	2	5	2	1	1	1	1	2
293	T	C	D	I	1	S	5	6	1	2	S	2	1	7	2	3	87	27	13	4	2	5	3	1	2	1	1	2
333	P	C	S	I	1	S	5	5	1	4	B	4	3	2	4	3	84	30	16	4	3	3	1	1	2	2	1	2
334	P	C	D	I	2	S	2	6	1	2	R	2		2	3	1	64	19	22	5	2	7	5	1	2	2	2	2
341	P	D	J	S	I	S	3	3E	1	2	R	3	4	2	5	3	92	32	23	6	3	6	4	1	2	1	2	2
351	T	C	D	I	1	S	3	6	1	1	P	2	1	2	3	4	80	29	17	5	4	3	1	1	1	1	1	1
351A	T	C	D	I	1	S	3	6	1	3	S	3	1	7	3	3	94	23	13	3	1	3	2	1	1	1	1	2
351B	P	C	D	I	2	N	5	3D	1	2	R	2	1		3	3	75	27	22	6	2	3	1	1	2	1	1	2
354	T	D	J	S	1	S	3		1	2	R	3		2	5	5	93	19	21	5	2	3	5	1	2	2	2	2
370	P	D	J	S	2	S	5	3D	1	3	M	3	2	4	3	2	84	30	21	6	3	4	5	1	2	2	2	2
371	T	C	D	I	1	S	3		1	3	W	3	1	8	4	3	93	36	38	5	3	4	1	1	1	1	1	2
378	T	C	D	I	1	S	3	6	1	3	Y	4	3	7	4	3	94	29	23	5	3	5	5	1	2	2	1	2
380	T	C	D	I	1	S	2	3D	1	3	R	4	3	6	4	2	84	35	24	5	3	5	4	1	2	1	1	2

TOR	PO	MO	BJ	JC	LI	SN	EN	PS	ST	TS	GO	GN	SC	BD	PA	EN	FL	HT	HL	HW	PT	PW	EN	BD	ET	KL	ST	KP
386	T	C	D	I	1	S	3	6	1	3	R	4	4		4	2	84	30	21	5	2	6	4	1	2	1	2	2
391	T	C	D	I	1	S	1	4E	1	3	W	4	2	8	2	2	84	22	25	4	2	5	4	1	2	2	1	2
392	T	C	D	I	1	S	1	6	1	2	R	3	3	5	3	3	83	25	26	6	3	5	2	1	2	1	1	2
396	T	C	D	I	1	S	3	4E	1	3	R	4	4	6	4	4	84	24	23	4	3							
397	T	C	D	I	1	N	5	5		2	B	3	1	7	5	3	84	24	18	4	2	5	3	1	2	1	1	2
398	T	C	D	I	1	S	1	4E	1	3	B	3	1	7	5	5	95	25			3	3	3	1	2	1	1	2
399	T	C	D	I	1	S	3	6								3	84	29	22	4	3	5	3	1	1	1	1	2
410	T	C	D	I	1	N	2	NE		3	B	7	3		3	3	90	29	26	4	3	5	5	1	2	2	1	2
411	P	C	D	I	1	S	2	4E	1	3	W	3	2	7	5	4	84	28	23	4	2	6	5	1	2	2	1	2
415	T	C	D	I	1	S	1	4E	1	3	W	4	4	6	3	3	86	20	26	4	2	5	4	1	2	2	2	2
417	T	D	J	S	1	S	1	4E	1	2	S	4	4	6	3	3	84	21	22	4	2							
423	P	C	D	I	1	S	1	6	1	1	R	2	3	2	3	3	84	18	22	5	3	7	5	1	2	1	2	2
428	T	C	D	I	1	N	2	5								4	90	28			2	5	2	1	1	2	1	2
431	P	C	D	I	1	N	4	4E	1	3	R	3	3	2	3	2	85	27	21	5	3							
434	T	D	D	I	1	N	2		1	2	W	3	1	7	3	4	87	33	22	6	4	5	2	1	1	1	1	2
443	T	C	D	I	1	S	2		1	3	R	3	5	2	3	3	89	29	23	5	2	6	3	1	2	1	1	2
447	T	C	D	I	1	S	1	3E	1	3	W	4	2	7	2	3	85	24	24	5	1	5	4	1	2	2	1	2
448	T	C	D	I	1	S	4	5	1	2	G	3	1	2	3	3	75	24	15	7	1	5	4	1	2	2	1	2
449	T	C	D	I	1	S	3	6	1	2	S	3		2	5	3	84	26	20	5	3	5	4	1	2	2	1	2
455	T	C	D	I	1	S	1	4E	1	3	S	3	1	7	5	3	84	29	20	4	2	4	2	1	1	1	1	2
456	T	C	D	I	1	S	3	4E	1	3	R	3	4	5	3	3	84	29	22	5	2	6	3	1	2	1	1	2
457	T	C	D	I	1	N	3	4E	1	1	R	2	1	5	5	4	89	30	24	6	3	3	3	1	2	2	1	2
466	T	C	D	I	1	S	2	6	2	2	G	2	3	2	2	2	60	19	24	5	3	6	5	1	2	1	2	2
467	T	C	D	I	1	S	2	5	1	2	P	3		2	3	3	58	14	15	4	3	6	4	1	2	1	2	2
479	T	C	D	I	1	N	2	4E	1	2	S	3		5	2	3	83	21	22	4	3	7	4	1	2	2	2	2
480	T	C	D	I	1	S	1	4E						2	2	3	85	31	21	5	4	5	5	1	2	2	2	2
487	T	C	D	I	1	S	5	4D	1	3	S	4	1	5	2	4	95	31	20	5	5	3	3	1	2	2	2	2
498	T	C	D	I	1	N	3		1	2	S	1	1	6	3	3	96	33	21	5	3	2	2	1	2	1	1	2
499	T	C	D	I	1	N	3		1	4	W	6	1	3	3	3	96	34	27	4	3							
500	T	C	D	I	1	N	3		1	2	W	3	1	8	3	3	96	33	27	5	3	3	3	1	2	1	1	2
501	T	C	D	I	1	S	4	4D	1	4	W	4	2	2	2	2	107	35	20	8	1	6	5	1	2	2	2	2
505	T	C	D	I	1	N	3			2	W	2	1	8	3	4	101	34	22	6	3	4	4	1	2	2	2	2
505A	T	C	D	I	1	N	3	8	1	3	P	4	2	2	2	4	99	33	18	8	4	5	5	1	2	2	2	2
505B	T	C	D	I	1	N	3		1	2	W	2	1	8	3	4	101	31	33	5	4							
517	T	C	D	I	1	S	3	4D	1	3	R	3	2	2	2	3	107	35	21	7	2	4	4	1	2	2	2	2

TOR	RO	MO	SO	[illegible]	LO	GN	RN	PO	ST	TR	GO	CH	CO	RO	FA	EX	FL	FT	HL	HM	PT	MM	EN	ED	ET	RL	ST	KP
525	T	C	D	I	2	N	3	3D	1	3	R	4	1	3	4	4	103	34	21	7	3							
527	T	C	D	I	1	S	5	4D	1	4	P	4	2	2	2	2	100	33	18	7	3	3	1	2	2	2	2	2
530	T	C	D	I	S	1	S	3	4D						4	3	90	30	21	7	1	3	4	1	2	2	2	2
546	T	C	D	I	1	N	3	2D	1	2	S	2	1	5	4	3	83	28	14	8	2	4	4	1	2	1	1	2
547	T	C	D	I	1	N	3	2E	3	4	B	5	2	2	5	4	81	25	13	3	5	3	3	1	2	1	1	2
556A	P	C	D	I	1	S	3	4E		2	R	3	3	5	3	2	86	29	11	5	3	5	4	1	2	1	1	2
556B	P	C	J	S	1	S	1	6		3	W	8	3	8	5	3	90	32	13	4	2	3	1	1	2	1	1	2
558	T	C	D	I	1	S	3	2E	3	5	B	5	5	1	5	3	73	26	23	5	2	3	4	1	2	2	2	2
565B	P	C	D	I	1	S	3	6		3	S	3	1	8	3	4	85	26	15	4	2	4	3	1	2	1	1	2
572	P	C	D	I	1	S	3	4D	1	3	R	4	2	2	2	3	108	32	19	7	2	6	3	1	2	2	2	2
577A	P	C	D	I	1	S	5	4D	1	1	P	3	2	2	2	3	105	33	18	7	1	5	4	1	2	2	2	2
587	T	C	J	I	1	S	2	6	1	2	B	4	5	2	2	3	59	12	16	4	3	4	5	2	2	2	2	2
609	T	C	D	I	1	S	2	3E		3	Y	4	1	7	4	4	97	30	18	5	1	4	4	1	2	2	1	2
610	P	C	D	I	1	S	3	3D	1	3	P	3	2	2	3	3	93	30	16	6	2	4	4	1	2	2	2	2
617	P	C	D	I	1	N	3	3E	1	3	P	3	2	3	3	4	101	31	19	7	3	4	4	1	2	2	2	2
627	T	D	J	S	2	N	3	3D	1	2	R	4	2	2	5	4	101	30	25	6	3	3	5	1	2	2	2	2
633	T	D	J	S	1	N	5	6	1	3	B	4	2	2	5	4	103	26	23	5	3							2
635	T	C	D	I	1	N	3	4E	1	2	R	3	4	2	3	3	93	29	18	5	2	4	4	1	2	2	2	2
640	P	C	D	I	2	N	3	4E		2	S	3	2	2	3	3	100	33	17	6	2	4	4	1	2	2	2	2
653	T	C	D	I	3	S	1	2D	1	1	R	1	1	2	3	3	82	32	22	5	3	4	2	1	2	1	1	2
663	P	D	J	S	3	S	5	6	1	3	P	4		2	4	3	86	29	18	5	2	4	4	1	2	2	2	2
694	P	D	J	S	3	S	5	4E	1	4	B	4		2	4	3	84	29	20	5	1	4	4	1	2	2	2	2
705	T	C	D	I	1	S	1	6							2	2	65	20	22	6	3	7	4	1	2	2	2	2
706	T	D	J	S	3	S	3	3D	1	3	B	4	2	2	4	2	85	28	22	5	3	5	3	1	2	2	2	2
707	P	D	J	S	2	S	2	4E	1	3	S	4	2	2	4	2	85	31	16	4	3	5	3	1	2	2	2	2
708	P	D	J	S	2	S	3	4E	1	4	B	4	3	2	4	4	85	28	20	5	3	4	4	1	2	2	2	2
714	T	C	D	I	1	S	1	6	1	1	B	3	3	2	3	3	85	31	16	4	3	4	5	1	2	2	1	2
720	T	C	J	I	1	S	2								2	2	58	15	18	5	3	5	3	1	2	2	2	2
733	P	D	J	S	1	S	5	3E	1	3	B	4	4	2	5	2	37	29	19	5	2	4	5	1	2	2	2	2
738	T	C	D	I	1	S	3	6	1	2	S	2	2	2	3	2	85	31	18	5	2	4	4	1	2	2	1	2
738A	P	C	D	I	1	S	3	6					5	2	4	3	85	29	17	5	3	4	2	1	2	1	1	2
738B	P	D	J	S	2	N	3	6	1	4	B	3	1	2	5	3	86	29	20	6	2	4	4	1	2	2	2	2
738C	T	C	D	I	1	S	3	3E	1	1	R	2	3	2	3	3	85	28	21	5	3	4	3	2	2	1	1	2
738D	P	C	D	I	1	S	1	3D	1	1	S	1	1	2	3	3	79	29	24	7	2	4	1	1	1	1	1	2
738E	P	C	D	I	1	S	3	4E	1	2	S	3	5	2	3	3	83	30	19	6	1	4	5	1	2	2	2	2

TGR	PC	MC	SI	JQ	LD	SN	EN	PS	ST	TS	GC	GV	SC	BD	PA	EV	FL	HT	HL	HW	PT	AW	EX	EC	ET	KL	ST	KP
738F	P	C	D	I	2d	N	3	6	1	3	R	3	4	7	4	3	85	30	21	5	2	4	4	1	2	2	2	2
738G	P	C	D	I	5	S	5	4E	1	3	R	3	2	2	4	3	85	28	19	6	3	5	4	1	2	2	2	1
738H	P	C	D	I	1	S	4	6	1	1	R	2	1	7	3	4	84	32	19	5	2	4	2	1	2	1	1	2
753	T	C	D	I	1	S	3	4E	1	2	R	3	3	2	2	2	83	26	21	5	2	4	3	1	2	1	1	2
755	T	C	D	I	2	N	2	6	1	2	S	3	1	6	5	5	91	23	14	4	2	3	4	1	2	2	2	2
759	T	C	J	I	1	S	2	4E	1	2	S	3	1	6	3	3	85	26	19	4	2	4	2	1	2	1	1	2
771	P	D	J	S	2	N	3	4E	1	4	B	4	2	2	5	4	92	28	19	4	2	4	4	1	2	1	2	2
824	T	C	D	I	1	S	1	8	1	4	B	4	3	2	3	3	82	25	9	6	4	3	5	1	2	1	1	2
840B	P	D	J	S	4	N	2	6	1	2	P	3	2	2	5	2	86	30	18	5	2	3	3	2	2	1	1	2
866	P	D	J	S	4	S	3	4E	1	3	B	4	2	2	5	2	80	31	23	5	1	5	4	2	2	1	2	2
877	P	D	J	S	3	S	3	3D	1	4	R	4	4	2	5	3	94	28	14	4	1	4	4	1	2	2	2	2
885	P	D	J	S	3	S	3	5							5	3	86	29	22	6	3							
902	P	D	J	S	3	S	3	2E	1		R	4		2	5	3	87	30	22	4	2	4	4	2	2	2	2	2
907	P	C	D	I	1	S	1	2E	1	2	P	2	4	5	4	2	86	31	21	4	1	6	4	1	2	1	2	2
979	P	C	D	I	1	S	5	5	1	2	P	2		5	3	1	85	27	10	5	1	4	3	1	2	1	1	2
980	P	C	D	I	1	N	3	3E	1	2	P	3	5	2	3	1	84	28	20	4	2							
990	T	C	D	I	1	S	2	3D	1	2	W	1	1	3	3	2	84	29	21	7	2	3	2	1	2	1	1	2
1052	P	C	D	I	2	S	3	3E	1	2	R	2	1	5	5	3	87	28	17	4	2	3	1	1	1	1	1	2
1066	P	D	J	S	4	S	3	3E	1		P	4	2	2	5	4	86	28	24	6	3	5	4	1	2	2	2	2
1086	P	D	J	S	5	S	3	3D		2	B	4	2	2	5	3	86	30	19	7	2	5	4	1	2	1	2	2
1092	T	C	D	I	1	S	3	6	1	2	S	3	1	6	5	3	94	25	12	3	2	3	3	1	2	2	1	2
1093	P	D	J	I	5	S	3	3E	1	2	R	3	2	2	5	2	86	28	22	5	1	4	4	2	2	1	2	2
1103	P	C	D	I	3	S	1	6	1	2	R	3	3	2	2	2	83	19	22	5	1	7	5	1	2	1	2	2
1104	P	C	D	I	2	S	5	5							3	2	83	23	14	5	1	5	3	1	1	2	1	2
1111	T	C	D	I	1	N	1	2E	1	3	R	3	5	7	4	2	84	20	22	4	8	5	5	1	2	1	1	2
1112	P	C	D	I	1	S	2	4E	1	3	R	3	1	5	2	4	84	31	21	5	2	6	2	1	2	2	1	2
1116	P	C	D	I	1	S	3	5	2	2	R	3	1	4	3	3	84	25	12	4	2	3	2	1	2	2	1	2
1123	P	C	D	I	1	N	2	6	1	3	M	3	1	2	4	3	90	26	17	4	1	3	2	1	2	2	1	2
1124	P	C	D	I	1	S	1	3E		2	R	3	4	6	3	2	83	26	20	4	1	5	2	1	2	2	1	2
1125	T	C	D	I	1	S	3	5	1	2	R	3	1	4	3	4	20	32	22	5	2	5	4	1	2	1	2	2
1126	T	C	D	I	1	N	3	2E	1	2	S	2	1	5	4	4	20	32	22	5	2	5	4	1	2	1	2	2
1127	T	C	D	I	1	S	2	6	1	3	Y	4	1	7	4	3	94	24	14	4	2	2	2	1	2	2	1	2
1146	P	D	J	S	3	N	5	8	1	4	B	4	4	2	5	2	76	28	18	5	1	5	4	2	2	1	2	2
1147	P	D	J	S	3	S	3	2E	1	4	R	3	2	2	5	1	73	24	21	5	1		4	1	2	1	2	2
1158	T	C	D	I	1	S	1	2B		3		3	2	5	4	2	83	30	23	6	3	4	2	1	2	2	1	2

TGR	PC	MC	SJ	JC	LD	SN	EN	PS	ST	TS	GC	GW	SC	BD	PA	EN	FL	HT	HL	HW	PT	KW	EN	ED	ET	KL	ST	KP
1158A	T	C	D	I	1	N	5	5	1	2	B	3	1	5	4	3	85	27	23	5	2	5	2	1	2	2	1	2
1158B	P	C	D	I	1	S	1	4E	1	3	R	3	4	2	3	2	84	29	21	4	2							
1163	T	C	D	I	1	S	2	3E	1	3	S	3	1	1	3	2	93	32	22	5	2	4	3	1	2	1	2	2
1172	P	D	J	S	4	S	3	2E	1	3	S	4	2	2	5	2	93	30	22	5	2	4	3	1	2	1	2	2
1174	T	C	D	I	1	S	1	3E	1	2	W	3	1	5	3	3	84	30	21	5	4	4	3	1	1	2	1	2
1204	T	C	D	I	1	S	3	4E	1	2	S	3		6	4	4	92	31	19	5	4							
1204A	T	C	D	I	1	S	1	6	1	3	R	3	4		3	2	85	28	15	4	2	5	4	1	2	1	1	2
1204B	T	C	D	I	1	S	1	4E	1	3	P	3	1	5	3	2	85	30	19	4	3	5	3	1	2	1	1	2
1204C	T	C	D	I	1	S	3	4E	1	1	S	3		6	3	3	91	28	20	4	2	5	4	1	2	2	1	2
1206	T	C	D	I	1	S	2	3E					3	2	3	3	90	29	20	5	2							
1208	T	C		S	1	S	5	2B	1	3	P	4	2	2	5	2	94	30	25	5	2							
1209	P	C	D	I	2	S	1	6	1	2	P	2	1	2	2	2	81	24	22	6	2	4	3	2	1	1	2	2
1224	T	C	J	I	2	S	3	4E	1	2	R	3	2	2	4	3	82	25	22	5	1							
1230	T	C	D	I	1	S	2	3D	1	1	P	2	4	2	3	3	90	30	16	5	2							
1234	T	C	D	I	2	S	3	3D	1	2	N	3	2	6	4	4	92	31	20	5	2	4	2	1	2	1	1	2
1235	T	C	D	I	1	S	2	4D	1	1	R	2		1	3	3	92	31	20	7	1	5	4	2	2	2	2	2
1258	T	D	J	S	2	S	2	2D	1	3	R	4	2	3	5	3	89	28	15	7	1	4	4	2	2	2	2	2
1263	T	C	D	I	2	S	2	4E	1	3	R	3	1	2	3	4	92	34	25	6	2	6	2	1	1	1	1	2
1269	T	C	J	S	2	S	3	2D	1	2	R	4	2	2	4	4	90	29	29	6	2	5	4	2	2	2	2	2
1278	T	C	D	I	1	S	3	8	1	3	R	3	2	2	2	2	94	20	14	7	1	5	4	2	2	2	2	2
1287	T	C	D	I	1	S	2	3D		1	R	3	4	2	2	2	90	28	21	8	2	5	4	2	2	2	2	2
1317	P	C	D	I	1	S	5	8	1	3	P	2	3	2	2	1	89	19	12	7	2	4	3	1	2	2	2	2
1322	P	C	D	I	1	S	5	8	1	2	B	3	4	2	2	1	89	21	14	8	1	5	3	1	2	2	2	2
1325	P	C	D	I	1	S	5	8	1	2	B	3	2	2	2	1	89	21	13	7	2	6	4	2	2	2	2	2
1333	T	C	D	I	1	S	3	3D	1	2	B	2	2	2	3	2	78	27	20	7	2							
1341	T	C	D	I	1	S	3		1	1	R	2	1	8	4	3	108	34	33	6	3	4	2	1	2	1	1	2
1347A	T	C	D	I	1	S	5	8	1	2	B	2	2	2	3	2	89	21	14	6	2							
1347B	T	C	D	I	1	N	5		1	2	W	3	1	6	5	4	110	31	23	5	3	5	5	1	2	2	2	2
1347C	T	C	D	I	1	N	2		1	3	R	4	2	6	4	2	111	35	23	5	2	5	3	1	2	2	2	2
1347E	T	C	D	I	1	N	2	2E	1	4	P	4	2	5	5	2	111	34	22	5	2							
1358	T	C	D	I	1	S	3	3E	1	2	P	3	1	5	2	2	89	21	17	6	2	5	3	2	2	2	2	2
1372	P	D	J	S	I	S	3	7	1	4	P	4	2	2	4	3	96	29	20	5	3	4	4	2	2	2	2	2
1384	P	D	J	I	1	S	4	8	1	3	Y	4	2	2	3	2	96	30	17	7	2	5	3	2	2	2	2	2
1385	P	C	D	I	1	S	5	2E	1	2	R	3	4	2	2	2	88	22	15	6	3	6	5	1	2	2	2	2
1402	T	C	D	I	1	S	4	4D	1	1	R	3	2	2	5	2	99	30	16	4	1	3	2	1	2	1	1	2

TGR	PC	MC	SJ	JC	LD	SN	EN	PS	DT	TD	GC	GV	SC	BC	PA	EN	FL	HT	HL	HW	PT	KW	EK	EC	ET	KL	ST	KP
1406	T	C	D	I	1	S	3	7	1	5	G	6	1	6	3	2	101	30	18	6	2	5	3	2	2	2	2	2
1423	P	C	D	I	1	N	1	5	1	1	P	4	3	2	3	4	85	28	20	3	2							
1435	P	D	J	S	1	S	3	6	1	4	B	4	4	2	3	4	85	26	19	5	3	4	3	2	2	2	2	2
1444	P	C	D	I	1	S	2	5	1	2	P	2		2	4	4	80	26	18	5	4	4	3	1	1	1	2	2
1448	T	C	J	I	1	S	2	2D	1	1	B	3	4	2	2	3	58	14	15	5	2	5	4	1	2	2	2	2
1460	P	C	D	I	1	N	1	5	1				2	3	3	2	78	29	20	6	2	3	1	1	2	1	1	2
1461	P	C	J	S	1	N	3	8		1	W	3	2	2	4	4	95	28	13	5	5	5	3	2	2	2	2	2
1482	P	C	D	I	1	N	3	4E	1	2	B	3	1	2	3	4	92	30	19	7	3	6	4	1	2	2	2	2
1501	T	D	J	S	1	S	2	4E		3		2	2		3	4	97	28	24	5	2	4	4	1	2	2	2	2
1503	P	D	J	S	1	S	3	4E	1	4	P	4	2	2	4	5	99	29	21	5	2							
1516	P	D	J	S	1	S	5	2D	1	4	P	4	3	2	4	4	100	29	18	5	3	4	3	1	2	2	2	2
1521	P	D	J	S	1	S	5	3E	1	4		3	2	2	4	5	100	29	15	5	2	4	3	1	2	2	2	2
1535	T	D	J	S	1	N	5	2D	1	4	B	4	2	2	3	3	90	29	23	7	3							
1537	P	C	D	I	1	S	3	2E	1	3	P	3	1	6	4	3	98	33	26	8	3							
1543	P	C	J	S	1	S	3	5	1	3	B	4	4	2	4	5	100	30	19	6	3	4	3	1	2	2	2	2
1544	T	D	J	S	1	S	3		1	4	R	4				5	95	26	21	4	3							
1546	P	C	D	I	1	N	3	5	1	3	W	3	2	2	4	5	101	34	27	5	1	5	4	1	2	2	1	1
1552	P	D	J	S	1	S	3	5	1	4	P	4	1	6	4	4	94	30	18	5	2	3	3	1	2	2	2	2
1556	P	D	J	I	1	S	3	2D	1	2	B	4	2	2	4	2	72	25	18	6	2	5	4	1	2	2	2	2
1574	T	C	D	I	1	S	2		1	3	R	4	2	2	2	3	86	19	18	6	3	5	3	2	2	2	2	2
1575	T	C	D	I	1	S	2	6	1	5	S	4	2	2	3	2	95	32	23	6	3	3	4	1	2	2	1	1
1605	P	D	J	S	2	S	3	8	1	4	Y	4	2	6	4	4	95	33	25	5	2	3	3	1	2	2	2	2
1622	T	C	D	I	1	S	2	4E	1	3	W	3	2	2	4	4	95	29	19	6	2	6	5	1	2	2	2	2
1625	T	C	D	I	1	N	3	8	1	3	W	4	2	2	2	2	95	33	18	7	3	6	5	1	2	2	1	2
1636	T	D	J	S	1	S	3	2D					1	6	4	4	93	33	19	7	2	7	3	1	2	2	2	2
1642	P	D	J	S	1	N	1	2D	1	3	B	4	2	2	4	4	93	24	23	7	4							
1643	P	D	J	S	1	S	3	8	1	4	B	4	4	2	5	5	93	28	20	7	2							
1673	P	C	D	I	1	S	3		1	2	R	3	2	2	4	2	89	25	15	8	2	5	5	1	2	2	2	2
1680	T	C	D	I	1	N	2		1	3	W	3	2	8	2	3	101	31	27	7	3	4	3	1	2	2	1	1
1690	T	C	D	I	1	N	2	8	1	2	B	2	4	7	4	2	96	35	31	5	2							
1691	P	C	D	I	1	S	5	4E	1	2	R	3	2	2	4	2	90	28	16	9	2	6	4	2	2	2	2	2
1694	P	D	J	I	1	S	3	4D	1	1	B	3		2	3	3	68	13	21	6	3	4	4	1	2	2	2	2
1697	T	C	D	I	1	N	3	8		3	S	3	2	2	3	2	94	35	19	7	2							
1704	T	C	D	I	1	N	3	9	1	3	W	4	2	2	2	2	93	29	17	8	2	7	5	1	2	2	2	2
1705	P	C	D	I	1	S	5	4E		2	R	4	4	2	2	2	89	23	15	8	1	6	3	1	2	2	2	2

TGR	PO	MO	SJ	JJ	LD	SN	EN	PS	ST	TS	GD	JV	SJ	BD	PA	EV	PL	HT	HL	HW	PT	NW	EN	ED	BT	NL	ST	KP
1703	P	C	D	I	1	S	5	8	1	2	R	4	4	2	2	3	94	16	17	5	3	5	4	1	2	2	2	2
1722	T	C	D	I	1	S	3								3	4	112	33	27	5	3	4	3	1	2	2	2	2
1726	P	B	J	S	1	N	1	8	1	2	B	1	5	2	3	4	95	30	13	5	2	4	4	1	2	2	2	2
1735	P	D	J	S	1	N	2	2E	1	3	P	4		2	4	3	97	32	22	7	2							
1736	T	D	J	S	1	N	5	4E	1	3	R	4	4	2	4	4	102	27	17	7	2	7	3	1	2	2	2	2
1745	T	C	D	I	1	N	2	3E		4	W	4	1	6	5	2	95	31	18	8	1	6	3	1	2	2	2	2
1746	T	C	D	I	1	N	3	8	1	3	W	4	2	2	3	2	95	31	18	8	1	6	3	1	2	2	2	2
1757	T	C	D	I	1	N	3	8	1	3	S	4	5	2	3	2	95	31	16	8	3	6	5	1	2	2	2	2
1761	T	D	J	S	1	S	5	4E	1	4	B	4	2	2	5	3	95	29	22	6	3	5	4	1	2	2	2	2
1764	P	C	D	I	1	S	5	8	1	2	R	2	4	2	2	3	89	24	15	7	2	5	5	1	2	2	2	2
1768	T	C	D	I	1	N	3	9	1	2	W	3	4	2	3	2	94	31	17	9	1	7	4	1	1	2	2	2
1775	P	C	D	I	4	N	3	2D	1	3	V	3	2	7	4	2	94	31	17	9	1	7	4	1	1	2	2	2
1789	P	C	D	I	1	N	5	8	1	2	R	3	4	2	2	3	89	23	15	8	2	5	4	1	2	2	2	2
1796	T	C	D	I	1	N	3	9		2	W	4	2	2	3	2	93	31	17	8	3	6	5	1	2	2	2	2
1813	T	C	D	I	1	N	3	4E	1	3	B	4	1	2	3	2	94	34	21	7	1	5	4	1	2	2	2	2
1835	T	C	D	I	1	N	2	4E	1	5	B	5	1	2	4	3	88	28	20	5	2							
1838	T	C	D	I	1	N	3	3E	1	5	P	6	1	2	4	4	95	31	22	5	3	4	4	1	2	1	2	2
1846	P	D	J	S	1	N	2	2E		3	R	4	5	2	5	3	97	31	19	7	2	4	5	1	2	2	2	2
1850	T	C	D	I	1	N	4	3D	1	3	W	4	2	2	2	2	101	30	20	6	3	6	4	1	2	2	2	2
1851	P	C	D	I	1	N	3	2E							4	3	90	27	15	7	1	4	4	1	2	1	2	2
1856	T	C	D	I	1	N	3	3E	3	5	B	5	5	2	5	4	105	31	24	5	1	3	3	1	2	2	1	2
1859	T	C	D	I	1	S	2	7	1	2	P	4	2	2	2	1	103	32	18	7	3	6	4	1	2	2	2	2
1862	T	C	D	I	1	S	2	2E	1	4	W	4	2	2	3	2	100	31	20	7	2	5	3	2	2	1	2	2
1878	T	C	D	I	1	N	3	2E	1	3	W	3	1	7	5	3	96	34	24	5	2	4	3	1	2	1	2	2
1868	T	C	D	I	1	N	2	1D	1	2	B	3	1	5	5	2	95	34	26	5	1	6	3	2	2	2	2	2
1896	P	C	D	I	1	S	1		1	3	R	3	1	7	5	3	94	34	24	5	1							
1901	T	C	D	I	1	N	2		1	1	W	2		7	5	3	92	34	27	6	2	4	3	.	2	1	1	2
1909	P	C	D	I	1	N							1	5	5	3	100	33	26	5	3	4	4	1	2	2	1	2
1918A	T	C	D	I	1	S	2	3D	1	1	W	2		7	5	3	109	34	34	4	2	4	4	1	2	1	1	2
1918B	T	C	D	I	1	N	2	4E		1	R	2	1	6	3	2	85	32	22	5	2	4	3	1	2	1	1	2
1918C	P	C	D	I	1	N	1	4E	1	1	R	3		5	3	3	85	25	24	4	2	3	3	1	2	1	1	2
1918D	T	C	J	I	1	S	1		1	2	R	3	1	3	3	3	58	14	18	4	1	4	3	1	2	2	2	2
1929	T	C	D	I	1	S	3								4	3	89	32	21	5	2	4	4	1	2	1	1	2
1929A	P	C	D	I	1	N	3	5	1	3	S	3	1	7	5	4	103	33	31	5	4							
1929B	T	C	D	I	1	S	5			2	B	3	1	2	3	2	85	24	21	5	3	5	3	1	2	1	1	2

TGR	PC	MC	SJ	JC	LD	SN	EN	PS	ST	TS	GC	GV	SC	BC	PA	EV	FL	HT	HL	HW	PT	HW	EX	EC	ET	KL	ST	KP
1931	T	C	D	I	1	N	1	2D	1	1	W	6	4	5	4	5	77	28	25	3	3	3	4	1	2	2	1	2
1934	T	C	D	I	1	N	3	8	1	3	W	3	1	8	4	2	114	33	25	5	3	4	3	1	2	2	1	2
2004	P	C	D	I	1	N	3	2D					3	2	3	2	93	31	24	6	1							
2009	T	C	D	I	1	N	3	3E	1	2	Y	3	1	7	4	2	106	36	31	4	2	4	2	1	2	2	2	2
2015	P	C	J	I	2	N	3	4E		3	G	4	1	2	4	2	76	31	25	7	2							
2016	T	C	D	I	1	S	2	2D	1	2	S	3	2	4	5	2	82	27	20	5	2							
2021	T	C	D	I	1	S	3	2D	1	2	P	2	1	3	3	4	61	8	17	4	2							
2026	T	C	D	I	1	N	3	5		2	R	3	1	2	4	3	114	35	26	5	2	3	4	1	2	1	1	2
2031	T	C	D	I	1	N	3	5	1	3	Y	3	1	8	4	3	108	36	32	4	2	3	3	1	2	1	1	2
2036	P	D	J	S	1	S	5	3D	1	2	B	3	4	2	5	3	93	27	18	4	2	4	3	1	2	1	1	2
2042	P	C	D	I	1	S	5	3D	1	3	W	3	1	6	5	3	85	26	14	4	2	4	3	1	2	1	1	2
2043	P	C	D	I	1	S	3	2E	1	3	P	4	1	2	4	2	82	29	25	6	2	4	3	1	2	1	1	2
2043B	T	C	D	I	1	S	3	3D	1	4	W	4	2	3	3	2	64	23	18	6	3							
2043C	T	C	D	I	2	S	3	5	1	3	W	2	1	3	4	3	99	34	26	5	2							
2043D	P	C	D	I	2	S	3	2E	1	2	B	3	1	5	3	3	82	29	26	6	2	4	2	1	1	1	2	2
2043E	P	C	D	I	2	S	5	2D	1	2	G	3	3	2	5	3	85	24	14	4	1							
2052	T	C	D	I	2	N	1	4D							5	3	111	34	28	5	2	3	2	1	2	1	1	2
2054	P	C	D	I	1	N	3	7							5	3	96	34	31	3	2	3	2	1	2	1	1	2
2055	T	C	J	I	1	S	5	8		2	R	3	3	2	3	2	92	26	14	7	2							
2056	P	D	J	S	1	S	3	3E	1	2	R	3	3	2	5	3	93	26	13	5	2	4	3	1	2	1	1	2
2064	T	C	D	I	1	N	3	3D		3	G	3	4	2	4	3	101	34	24	5	2							
2068A	P	D	J	I	1	S	1	2D	1	2	B	4		1	4	2	93	32	23	4	2	7	3	1	2	2	2	2
2068B	P	D	J	S	2	S	5	5	1	4	B	4	2	2	3	2	94	32	25	7	2							
2069	T	D	J	S	4	S	3	3D	3	3	B	4	3	3	5	3	89	24	16	6	1							
2076	T	C	D	I	1	S	5	3D	1	3		2	2		2	3	96	30	17	6	2	5	4	1	2	2	2	2
2082	T	C	D	I	1	N	3	4D	1	2	R	3	2	2	5	2	97	32	19	6	2							
2090	T	C	D	I	1	N	3	2D	1	3	Y	4	2	2	3	3	95	33	19	6	1							
2095	T	C	D	I	1	S	5	3E	1	2	R	3	2	2	3	2	89	25	15	8	2	5	4	1	2	1	2	2
2100	T	C	D	I	1	S	4	4E	1	2	B	2	1	6	5	4	80	29	21	5	2							
2101	T	C	D	I	1	S	3	4E	1	3	R	3	1	5	4	3	82	27	20	5	2							

TABLE 4: PASSPORT DATA OF PEARL MILLET GERMPLASM COLLECTED FROM ZIMBABWE DURING 1982

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1	070482	MLE	Mahusekwa	1	NW	18 19	31 10	1487	2	4		long heads
4	070482	MLE	Mahusekwa	2	W	18 18	31 10	1487	2	4		bristled
19	080482	MLE	Makumbe	4	W	17 31	31 13	1450	4	4	Musimboti	large seed
29	080482	MLE	Makumbe	4	NE	17 32	31 18	1200	4	4		bristled
37	140482	MSV	Chibi	19	E	20 23	30 40	750	2	4		
49	140482	MSV	Chibi	3	E	20 18	30 34	750	2	4		
77	150482	MSV	Gutu	32	NE	19 32	31 22	1100	2	4		cylindrical
78	150482	MSV	Gutu	32	NE	19 32	31 22	1100	2	4		thick heads
79	150482	MSV	Gutu	32	NE	19 32	31 22	1100	2	4		assorted
99	150482	MSV	Gutu	37	NE	19 32	31 25	1150	2	4		assorted
100	150482	MSV	Gutu	37	NE	19 32	31 25	1150	2	4		short,stout heads
101	150482	MSV	Gutu	37	NE	19 32	31 25	1150	2	4		long thin loose
106	150482	MSV	Gutu	50	E	19 36	31 28	1100	2	4		cylindrical
107	150482	MSV	Gutu	50	E	19 36	31 28	1100	2	4		bristled
116	160482	MSV	Gutu	41	S	19 51	31 22	1250	2	4		
119	160482	MSV	Gutu	41	S	19 51	31 22	1250	2	4		lanceolate
120	160482	MSV	Bikita	20	N	19 47	31 40	1050	2	4		
121	160482	MSV	Bikita	20	N	19 47	31 40	1050	2	4		bristled
126	160482	MSV	Bikita	42	NE	20 00	31 50	900	2	4	Runyarushiri	lanceolate
133	160482	MSV	Bikita	43	E	20 00	31 52	930	2	4	Tswetachena	long cylindrical
135	170482	MSV	Magaisa	1	SW	20 24	31 44	660	2	4		lanceolate
136	170482	MSV	Magaisa	1	SW	20 24	31 44	660	2	4		bristled
138	170482	MSV	Magaisa	1	SW	20 24	31 44	660	2	2		shattering
152	170482	MSV	Magaisa	13	S	20 26	31 52	650	2	4	Rukunda	cylindrical
165	190482	MSV	Kyle	33	E	21 15	31 03	1100	2	3	Rushambo	
175	190482	MSV	Kyle	3	E	20 15	31 03	1100	3	4		
180	190482	MSV	Kyle	25	SE	20 24	31 04	800	2	4		
188	190482	MSV	Kyle	28	S	20 25	31 03	800	2	4		
193	190482	MSV	Kyle	72	S	20 20	31 09	700	2	4	Rushambo	
208	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Rushambo	

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
217	200482	MSV	Neshuro	65	S	21 13	30 21	650	3	4		
224A	200482	MSV	Neshuro	84	S	20 17	30 28	580	2	2		shattering
224B	200482	MSV	Neshuro	84	S	20 17	30 28	580	2	4		
226A	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4		Semi shattering
226P	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4		cylindrical
226C	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4		bristled
227	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4		
232	210482	MSV	Sabi	20	S	21 07	32 08	350	2	4		
232A	210482	MSV	Sabi	11	S	21 04	32 07	400	2	4		cylindrical
232B	210482	MSV	Sabi	11	S	21 04	32 07	400	2	4		short cylindrical
232C	210482	MSV	Sabi	11	S	21 04	32 07	400	2	4		bristled
232D	210482	MSV	Sabi	11	S	21 04	32 07	400	2	4		stumpy heads
232E	210482	MSV	Sabi	11	S	21 04	32 07	400	2	2		shattering
237	210482	MSV	Sabi	29	N	20 48	32 11	910	2	4		
244	220482	MSV	Malipati	25	N	22 56	31 13	340	1	2		wild
259	230482	MSV	Zaka	36	SE	20 31	31 31	570	2	4		
268	260482	MSV	Turgwana	6	S	20 29	30 42	770	2	4	Bungwe	
279A	260482	MSV	Bebejena	6	W	20 36	30 40	750	2	4		cylindrical
279B	260482	MSV	Bebejena	6	W	20 36	30 40	750	2	4		purple glumes
285A	260482	MSV	Bebejena	11	W	20 37	30 37	740	3	4		cylindrical
285B	260482	MSV	Bebejena	11	W	20 37	30 37	740	3	4		bristled
288	260482	MSV	Bebejena	19	SW	20 40	30 38	720	2	4		downy mildew
322	300482	MSV	Zaka	7	S	20 24	31 27	680	3	4	Rushambo	
372	300482	MSV	Zaka	35	N	20 07	31 16	1160	2	1		wild
375	010582	MDL	Charter	0		19 15	30 50	1300	8	4	Chifumbata	
376	010582	MLN	Wankie	0		18 30	26 35	900	8	4	Halale	improved
379	010582	MLN	Wankie	0		18 30	26 35	900	8	4	Halale	long heads
388	010582	MLN	Wankie	0		18 30	26 35	900	8	4		
400	010582	MDL	Shabani	0		20 08	29 57	1050	8	4	Rushambo	
401	010582	MDL	Shabani	0		20 08	29 57	1050	8	4	Bikita	
412	010582	MLN	Nkayi	0		19 05	28 50	1200	8	4		
418	010582	MLN	Nkayi	0		19 05	28 50	1200	8	4	Tsholotsho	bristled
429	010582	MDL	Chilimanzi	0		19 40	30 45	1400	8	4		
431	010582	MLE	Plumtree	0		20 28	27 45	1300	8	4	Isifumbata	
433	010582	MLN	Binga	0		17 40	27 20	592	8	4		

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
439	010582	MDL	Belingwe	0		20 35	30 01	1060	8	4		
444	010582	MLE	Tsholotsho	0		19 50	27 45	1050	8	4	Halale	
454	010582	MLN	Lupane	0		18 50	27 45	1057	8	4		
465	010582	MDL	Selukwe	0		19 50	30 10	1200	8	4		
476	010582	MLN	Inkosikazi	0		18 20	27 45	1200	8	4		
477	010582	MLN	Inkosikazi	0		18 20	27 45	1200	8	4		
478	010582	MLN	Inkosikazi	0		18 20	27 45	1200	8	4		
495	050582	MNL	Gata	2	E	20 03	32 53	700	1	1		wild
545	070582	MNL	Mhedziwa	17	W	19 33	32 34	1030	4	4	Hoti	
561	070582	MNL	Wengezi	28	S	19 35	32 26	600	3	4		1981 harvest
562	070582	MNL	Wengezi	36	S	19 35	32 30	700	3	4		
564	070582	MNL	Wengezi	41	SE	19 44	32 34	780	3	4		
613	100582	MNL	Tamandayi	19	S	20 18	32 49	700	1	1		
637	110582	MNL	Mt Selinda	4	S	20 26	32 44	900	2	4		conical heads
654	110582	MNL	Mt Selinda	8	S	20 26	32 45	860	3	4		
713	180582	MDL	Zhombe	5	S	18 41	29 19	1180	3	4		
757	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4		Cylindrical
758	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4		conical
791	200582	MDI	Sadza	0		18 53	31 24	1420	3	4	Johni	
810	200582	MDL	Sadza	0		19 53	31 24	1420	3	4	Chizambia	
850	210582	MDL	Gokwe	39	W	18 14	28 41	1100	3	4	Rushambo	
861	220582	MDL	Manyoni	10	W	18 10	28 34	1100	3	4		Early maturing
869	220582	MDL	Manyoni	19	W	18 07	28 31	1100	3	4	Rushambo	
894	240582	MDL	Mkoba	3	E	19 21	29 33	1300	3	4		
901	240582	MDL	Mkoba	3	E	19 21	29 33	1300	3	4		
901A	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		Bristled
901B	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		Cyl. brist.
901C	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		Cylindrical
909A	240582	MDL	Mkoba	26	W	19 17	29 28	1300	3	4		Conical
909B	240582	MDL	Mkoba	26	W	19 17	29 28	1300	3	4		Cylindrical
975	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Chizambia	
988	200582	MDL	Sadza	8	NE	18 53	31 24	1420	3	4	Joni	
991	200582	MDL	Mupatsi	5	E	19 02	31 28	1200	3	4	Joni	
1032	200582	MDL	Mupatsi	5	E	19 02	31 28	1200	3	4	Joni	
1052	260582	MDL	Donga	3	N	19 43	30 10	1250	3	4		

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
1072	260582	MDL	Donga	19	SE	19 44	30 16	1200	3	4	Rushambo	
1087	260582	MDL	Donga	14	SE	19 50	30 13	1200	3	4	Nyanjiri	
1098	270582	MDL	Masungo	6	SW	20 46	30 19	750	3	4	Rushambo	
1117	270582	MDL	Mataka	1	W	20 51	30 11	760	3	4	Weshoko	
1128	270582	MDL	Mataka	0		20 51	30 12	760	3	[illegible]	Rushambo	
1149	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	2	Rushambo	
1159	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4	Rushambo	
1164	280582	MDL	Shabani	23	N	20 08	29 57	1050	3	4		
1194	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4		
1231	020682	MNL	Nyatate	4	E	18 01	32 39	1190	3	4		
1288	030682	MNL	Nyamurunda	0		17 52	32 55	1200	3	4		
1292	070682	MNL	Shamawga	0		18 33	32 46	850	1	1		Wild
1451	110682	MNL	Musani	0		20 04	32 25	600	3	4		
1455	110682	MNL	Musani	4	N	20 03	32 26	700	3	4		
1461	110682	MNL	Changazi	0		19 58	32 25	610	3	4		
1462	110682	MNL	Birchenough	14	S	20 04	32 21	500	3	4		
1463	110682	MNL	Birchenough	14	S	20 04	32 21	500	3	4	Chigwihinini	
1468	110682	MNL	Birchenough	19	S	20 07	32 22	490	3	4		
1582	180682	MLW	Murombedzi	7	E	17 39	30 15	1300	3	4		
1632	210682	MLW	Magunje	7	E	16 53	29 28	1200	3	4		
1692	220682	MLC	Chimusimbe	3	E	17 10	29 29	1100	3	4		
1879	010782	MLC	Nhawa	30		16 35	32 10	1000	3	4		Long heads
1887	010782	MLC	Nhawa	9	N	16 32	32 11	1000	3	4		Long heads
1890	010782	MLC	Nhawa	9	N	16 32	32 11	1000	3	4		Short heads
1892	010782	MLC	Kasenzi	1	E	16 35	32 14	850	3	4		
1895	010782	MLC	Nkondi	1	W	16 37	32 17	750	3	4		Long bristled
1900	010782	MLC	Mary Mount	8	W	16 37	32 26	680	3	4		Assorted
1906	010782	MLC	Mary Mount	12	W	16 39	32 21	650	3	4		Bristled
1910	010782	MLC	Mary MOunt	23	W	16 40	32 14	680	3	4		Bristled
1916	010782	MLC	Rushinga	3	N	16 37	32 01	1000	3	4		
1917	020782	MLC	Mukumbura	0		16 12	31 42	450	3	4		Assorted
1930	020782	MLC	Mukumbura	13	S	16 20	31 45	530	3	4		Assorted
1933	020782	MLC	Mukumbura	24	SE	16 25	31 49	900	3	4		
1964	030782	MLC	Chavanda	0		16 37	31 41	960	3	4		
2010A	060782	MLC	Mzarabani	10	N	16 22	31 01	410	3	4		Bristled

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
2017	060782	MLC	Mzarabani	25	NE	16 18	31 05	400	3	4		Long cylindrical
2022	060782	MLC	Musengedzi	23	S	16 15	31 07	300	3	4		
2023	060782	MLC	Musengedzi	23	S	16 15	31 07	300	3	4		
2027	060782	MLC	Musengedzi	4	SW	16 07	31 06	300	3	4		
2032	060782	MLC	Masomo	1	W	16 17	30 35	400	3	4		
2038	070782	MLC	Chitsungo	3	E	16 16	30 28	400	3	4		
2044	070782	MLC	Angwa	39	W	16 03	30 18	400	3	4		
2049	070782	MLC	Chapo	30		16 44	30 23	350	3	4		
2053	070782	MLC	Angwa	0		16 12	30 17	400	3	4		
2070	080782	MLC	Sipolilo	10	W	16 42	30 39	1200	3	4		

DESCRIPTORS AND DESCRIPTOR STATES FOR PEARL MILLET GERMPLASM EVALUATION

1 TGR: The number assigned by the collectors at the time of collecting the sample

2 EV: Early Vigour
Recorded on a 1-9 scale 24 days after emergence, the crop was thinned before recording to avoid the effect of plant number

3 DFL: Days to flowering
Number of days from field emergence to when 50% of the plants flowered. Stigma emergence on the main spike is considered as flowering

4 PHT: Plant Height
Measured in cm from the ground level to the tip of the spike

5 SPL: Spike Length
Measured in cm from the base to the tip of the spike on the primary tiller

6 SPT: Spike Thickness
Maximum diameter of spike, excluding bristles, measured in millimetres

7 NPT: Productive Tillers
The number of spikes which bear seed at the time of maturity and therefore constribute to yield. Immature spikes are not counted

8 SEM: Synchrony of Ear Maturity
3 Non synchronous
5 Intermediate
7 Synchronous

9 EXN: Spike Exsertion
3 Well exserted, more than 5 cm between ligule of flag leaf and base of spike
5 Base of spike just above the ligule of the boot leaf
7 More than 5 cm of the spike is within the boot leaf

10 FYP: Green Fodder Yield Potential
Considering tillering, leafiness and bulk, visually classified as
3 Poor
5 Intermediate
7 Good

11 YP: Yield Potential
Consider spike number size and density, seed number and size compared with a standard check
3 Low
5 Intermediate
7 High

12 OPA: Overall Plant Aspect
Overall agronomic desirability of an accession
3 Poor
5 Intermediate
7 Good

13 LS: Lodging Susceptibility
3 Low
5 Intermediate
7 High

14 BL: Bristle Length
1 Bristles below the level of seed apex
5 Bristle length not more than 2 cm above the seed surface
7 Bristles longer than 2 cm above the seed apex

15 COM: Spike Density
Depends on the number of grains per unit area and grain size
3 Loose
5 Intermediate
7 Compact

16 THR: Spike Shattering and Threshing
1 Spontaneous shattering
2 Shattering at touch
3 Non shattering and free threshing
4 Non shattering and difficult to thresh

17 GLC: Seed Covering
3 Exposed
5 Intermediate
7 Enclosed

18 ET: Endosperm texture
3 Mostly corneous
5 Partly corneous
7 Mostly starchy

TABLE 5: EVALUATION DATA OF PEARL MILLET GERMPLASM COLLECTED DURING 1982; AND GROWN DURING 1984-85 SEASON AT GWEBI (MEAN OF 3 REPLICATIONS)

TGR	EV	DFL	PHT	SPL	SPT	NPT	SEM	EXN	FYP	YP	OPA	LS	BL	COM	THR	GLC	ET
1	6	72	230	26	29	1.3	6.0	5.6	5.6	5.3	5.3	5.3	4.6	5.0	3.3	5.6	5.0
4	6	76	246	21	26	2.0	4.6	6.3	5.3	5.0	5.0	5.3	5.3	5.3	5.3	5.3	5.0
19	6	75	243	30	29	1.6	5.0	5.3	6.0	5.0	4.6	5.6	5.3	5.3	3.0	4.5	5.6
29	5	78	246	31	31	1.3	6.0	6.0	5.6	5.3	5.3	5.6	5.0	5.6	3.0	4.6	5.6
37	5	78	243	30	33	1.6	5.0	5.0	6.0	4.6	4.6	5.6	5.6	5.0	3.3	4.6	5.6
49	6	64	203	20	28	2.6	5.0	6.6	4.3	5.0	5.0	6.0	3.6	5.0	3.5	5.0	4.5
78	5	70	230	27	29	2.3	6.0	5.6	6.0	5.6	5.0	6.0	4.6	5.3	3.0	5.3	5.3
99	5	69	236	27	23	3.0	5.3	6.0	5.0	5.6	5.6	6.0	4.0	6.0	3.0	4.6	5.3
100	5	77	210	27	24	2.3	5.6	5.3	6.0	5.3	5.0	5.3	4.3	4.3	3.0	5.6	5.0
106	5	72	213	24	22	2.0	4.6	4.6	5.0	4.6	4.6	6.0	4.3	5.0	3.3	4.6	4.6
107	5	74	223	29	26	2.0	5.3	5.3	6.3	5.3	5.3	6.0	5.0	5.6	3.6	6.3	5.0
116	4	72	210	21	24	2.0	5.0	5.6	4.6	4.0	4.0	6.0	4.3	5.0	3.6	5.3	4.3
119	5	78	236	31	25	1.6	4.6	6.0	6.3	5.6	5.3	6.0	4.3	5.3	3.0	4.0	5.0
120	5	70	216	24	23	2.3	5.3	5.6	5.3	5.0	5.0	6.0	4.0	5.3	3.0	4.0	4.3
121	6	70	220	23	24	2.5	5.0	6.5	6.0	6.0	6.0	6.0	4.0	4.0	3.0	5.5	5.5
126	5	74	236	20	26	2.3	4.3	5.6	5.6	5.0	4.6	6.0	5.0	5.3	3.3	4.3	4.0
138	4	70	236	21	23	2.6	4.0	6.3	5.3	4.0	3.3	6.0	5.0	5.0	3.0	3.6	4.3
165	5	67	210	22	24	3.3	5.0	6.6	5.6	5.3	5.6	6.0	4.3	5.3	4.0	5.3	4.3
175	5	67	210	22	24	3.3	5.0	6.6	5.6	6.0	4.3	5.3	4.0	5.3	4.0	5.3	4.3
180	6	67	210	25	25	2.6	5.6	5.6	5.6	5.6	5.6	6.0	4.3	5.3	3.3	5.0	4.6
188	5	67	203	26	23	1.6	5.3	5.6	5.0	5.3	5.3	6.0	4.0	5.3	3.3	5.0	5.0
193	5	68	213	22	20	2.0	4.6	6.0	5.3	5.3	5.3	6.0	4.0	5.3	3.3	5.6	5.0
208	5	70	206	20	24	3.6	5.3	6.3	6.3	5.6	5.6	6.0	4.3	5.0	3.5	3.5	5.5
217	5	71	236	21	21	3.3	3.6	6.3	6.3	4.3	3.6	6.0	4.0	5.3	3.3	5.3	5.6
224A	4	72	223	24	19	3.0	3.0	6.6	6.0	4.0	3.3	6.0	4.6	5.0	3.0	5.0	5.0
224B	5	74	216	19	21	2.3	3.3	6.0	5.3	4.0	2.6	6.0	4.3	5.0	3.3	5.0	5.3
226A	5	71	213	26	20	2.3	5.3	6.0	5.0	5.0	5.0	6.0	4.0	5.6	3.3	4.6	5.0
227	6	70	240	26	24	1.5	5.0	6.0	6.5	6.5	6.0	6.0	4.0	5.5	3.0	4.5	5.0
232	7	74	260	22	32	4.0	6.0	5.0	7.0	6.0	6.0	6.0	4.0	7.0	3.0	3.0	4.0
232A	6	71	235	20	27	3.0	5.0	6.5	6.5	5.5	5.5	6.0	4.0	4.0	4.0	5.0	4.0

TGR	EV	DFL	PHT	SPL	SPT	NPT	SEM	EXN	FYP	YP	OPA	LS	BL	COM	THR	GLC	FT
232B	5	71	226	27	[illegible]	1.6	5.3	6.3	5.3	5.0	5.0	6.0	4.0	[illegible]	3.0	4.0	5.0
259	5	71	226	29	27	2.0	4.6	6.0	6.0	5.6	5.6	6.0	4.0	6.0	3.0	4.3	4.3
268	5	65	216	19	22	2.3	5.3	6.6	5.0	5.0	5.0	6.0	3.6	5.0	3.0	4.3	4.3
288	5	63	190	20	19	2.6	5.3	6.6	4.6	5.3	5.3	6.0	4.0	5.3	3.6	4.3	4.3
322	5	68	210	24	24	2.6	6.0	6.3	5.0	4.6	5.0	6.0	5.0	5.5	3.6	5.3	4.0
375	6	72	236	26	28	2.3	5.3	5.6	6.0	5.0	5.0	6.0	4.0	5.0	3.0	4.3	4.3
379	6	74	253	30	28	2.0	5.6	6.0	6.6	6.0	5.6	6.0	4.3	5.6	3.6	4.0	4.0
388	4	70	236	26	30	2.6	5.0	6.0	5.0	5.3	5.0	5.6	4.6	6.0	3.0	4.0	4.0
401	4	68	203	23	20	2.0	4.6	6.3	4.0	4.3	4.6	6.0	4.3	5.0	3.3	5.3	4.0
412	4	75	213	27	36	3.3	4.3	6.0	6.0	5.3	5.0	5.6	5.3	6.5	3.0	4.6	4.6
418	5	78	213	21	35	1.3	4.0	5.3	4.6	4.3	4.3	6.0	6.0	5.3	3.3	4.6	4.5
431	5	75	220	25	32	2.6	5.6	5.3	5.3	5.0	4.6	3.0	4.6	5.3	3.6	5.6	4.6
433	5	70	230	27	22	2.6	4.6	6.0	5.6	5.6	5.6	6.0	4.0	5.3	3.3	4.0	4.6
439	5	74	230	25	22	1.6	5.0	6.3	5.6	5.0	4.6	5.6	4.3	5.6	3.3	4.6	5.6
444	5	76	203	37	33	1.6	4.6	6.0	5.0	4.6	4.6	6.0	4.0	6.0	3.0	4.3	5.0
454	5	76	223	22	26	2.0	4.6	6.3	5.6	4.6	4.6	6.0	4.3	6.0	3.0	5.0	5.0
465	5	72	220	23	28	2.6	4.0	6.0	5.6	5.0	5.0	6.0	4.6	6.0	3.0	4.6	4.3
476	5	75	216	24	24	2.0	5.3	5.0	6.0	5.6	5.3	6.0	4.3	4.6	3.3	5.6	4.6
477	6	75	240	29	25	1.3	4.6	5.6	6.0	5.3	5.3	6.0	4.3	5.6	3.0	4.6	5.0
478	6	75	233	29	29	2.3	5.3	6.0	6.3	5.6	5.0	6.0	4.3	5.0	3.3	5.0	5.0
545	5	72	226	25	28	1.3	4.3	6.0	5.6	4.6	3.6	6.0	4.6	6.0	3.0	5.0	4.0
561	5	70	236	23	21	3.0	5.6	6.6	5.0	5.0	5.0	6.0	4.3	5.3	3.3	5.6	4.6
562	6	73	233	23	26	2.0	5.0	5.0	5.3	4.6	4.3	6.0	4.3	5.3	3.6	5.3	5.3
564	6	75	240	27	29	1.0	5.6	5.6	6.3	5.3	4.6	6.0	5.0	5.6	3.3	5.3	5.3
713	5	74	230	23	29	2.0	5.6	5.6	6.0	5.3	5.3	6.0	3.0	6.6	3.3	4.6	5.3
757	6	73	246	27	25	1.3	5.6	6.0	6.6	5.0	5.0	6.0	4.3	6.0	3.0	5.0	5.5
758	6	72	240	22	28	1.6	5.0	5.3	6.0	5.0	5.0	6.0	4.3	6.0	3.0	4.6	6.0
791	5	72	243	26	23	1.6	5.3	5.6	5.6	5.3	5.3	6.0	4.3	4.5	3.6	6.3	4.3
810	4	71	226	24	21	2.3	4.6	6.0	4.6	4.6	4.6	6.0	4.3	6.3	3.3	5.6	5.0
850	5	68	220	27	20	1.3	6.0	6.6	5.3	5.3	5.6	6.3	5.0	6.0	3.3	3.5	5.0
861	5	68	220	27	20	1.3	6.0	6.6	5.3	5.3	5.6	6.3	5.0	6.0	3.3	3.5	5.0
869	5	72	230	28	27	2.0	4.0	5.3	6.3	4.6	4.6	5.0	5.3	5.0	3.0	5.0	4.6
894	5	71	236	25	30	1.3	4.0	4.6	6.0	5.0	4.3	6.0	5.3	6.0	3.3	4.0	4.6
901	5	74	256	27	30	1.6	5.6	5.6	6.3	6.0	5.3	6.0	5.6	5.6	3.3	4.0	4.6
901A	6	75	220	18	39	2.0	5.0	5.5	5.5	5.5	5.0	6.0	6.5	7.0	3.0	5.0	5.0

TGR	EV	DFL	PHT	SPL	SPT	NPT	SEM	EXN	FYP	YP	OPA	LS	BL	COM	THR	GLC	ET
975	5	75	250	32	26	2.0	5.6	6.0	6.3	5.6	5.3	6.0	4.0	6.5	3.0	4.6	5.0
988	6	74	236	30	26	2.0	5.0	6.0	5.6	5.3	5.3	6.0	4.3	6.6	3.0	4.3	4.6
991	5	75	243	27	23	1.6	5.0	6.3	6.0	5.0	4.6	6.0	4.3	5.6	3.3	5.0	4.6
1032	4	68	216	25	26	1.6	5.0	6.3	4.6	4.3	4.3	6.0	4.6	6.0	3.5	5.3	4.6
1072	6	68	220	25	28	1.6	5.0	6.6	5.6	5.3	5.3	6.0	4.3	6.3	3.0	4.3	5.0
1087	5	74	210	25	28	1.6	4.6	6.0	5.0	4.6	4.6	6.0	4.6	5.0	3.3	6.0	4.6
1098	5	64	203	19	21	3.3	4.0	6.6	5.0	5.0	5.0	6.0	4.3	4.6	3.3	5.3	4.0
1117	5	68	210	25	26	2.0	4.6	6.3	5.0	5.0	5.0	6.0	4.3	5.3	3.3	3.6	4.3
1128	5	71	223	28	24	2.0	5.0	6.3	5.6	5.6	5.6	6.0	4.3	5.3	3.0	5.0	4.6
1149	5	74	210	28	24	2.0	4.6	5.6	4.3	4.0	3.6	6.0	4.3	5.3	3.3	4.6	5.0
1159	5	72	216	28	25	2.0	5.3	6.3	6.0	5.6	5.3	6.0	4.0	6.3	3.3	5.0	5.0
1164	6	73	250	26	26	1.6	6.0	6.3	6.3	6.0	6.6	6.0	4.6	5.5	3.5	4.5	4.0
1194	6	74	240	30	30	1.3	5.0	5.3	6.0	4.6	4.6	6.0	4.0	6.0	3.3	4.6	4.6
1231	6	76	246	31	28	1.6	5.3	6.0	6.3	5.6	5.6	6.0	4.3	4.5	3.5	4.0	5.0
1288	4	72	236	26	27	2.6	5.3	6.0	5.3	5.0	5.0	6.0	4.3	4.6	3.0	4.3	5.0
1451	5	71	220	22	23	2.0	5.0	5.6	5.3	5.0	5.6	5.3	4.6	4.6	3.6	5.0	5.5
1455	5	71	240	25	24	1.6	5.3	6.0	5.0	5.0	4.6	4.3	5.3	6.0	4.0	4.0	5.0
1461	5	71	240	25	24	1.6	5.0	5.6	5.6	4.6	5.3	5.6	4.0	5.0	3.0	3.0	2.5
1462	5	74	220	18	30	1.0	5.0	6.0	6.0	5.0	5.5	5.5	5.0	5.5	4.0	4.5	5.0
1463	5	73	220	22	27	2.6	4.6	6.0	5.6	5.0	5.0	5.3	5.0	5.3	3.3	4.0	4.0
1468	5	72	225	25	31	2.0	6.0	6.5	5.5	5.0	5.5	5.0	5.0	3.0	5.0	5.0	
1582	5	70	225	26	30	1.3	5.6	6.0	6.0	5.3	5.6	5.3	4.6	4.3	3.6	5.3	4.0
1632	6	74	230	28	28	1.6	5.3	6.0	5.6	5.3	5.6	5.6	4.3	6.0	3.3	4.0	3.5
1692	6	66	236	26	26	2.0	5.6	6.0	6.0	5.6	5.3	4.3	5.6	4.0	4.0	4.5	4.5
1879	5	79	240	30	26	1.6	4.6	5.6	6.0	5.0	5.3	5.3	4.3	5.0	3.5	5.5	5.0
1887	5	77	253	27	29	1.6	5.3	6.3	6.0	5.3	5.6	5.3	4.6	5.0	4.3	5.3	7.0
1890	6	78	253	25	27	1.6	4.6	6.3	6.6	5.0	5.3	5.6	4.6	4.6	3.6	4.6	5.0
1892	6	79	250	22	29	1.3	5.0	6.0	6.3	5.3	5.3	5.3	5.0	4.5	4.5	5.0	5.0
1895	6	80	250	32	27	1.5	4.0	5.5	6.0	5.0	4.5	6.0	6.0	6.5	3.5	4.5	4.5
1900	6	78	250	34	30	1.0	5.3	5.6	6.3	5.8	5.3	5.6	4.6	5.0	3.0	4.6	5.5
1906	5	76	233	31	28	1.3	4.3	6.0	5.3	4.6	5.3	5.3	5.0	4.5	4.0	5.0	5.0
1910	5	80	255	29	21	1.5	5.5	6.5	6.0	5.0	5.0	6.0	5.0	5.5	3.0	5.0	5.5
1916	3	86	220	23	24	1.0	4.0	5.3	4.0	3.6	4.3	4.6	4.6	4.3	4.0	5.3	5.0
1917	4	80	230	25	26	2.5	5.5	6.5	5.5	5.0	5.0	5.5	4.5	5.0	3.0	5.0	5.0
1930	5	77	233	28	30	2.0	4.3	5.0	5.3	4.3	5.0	5.0	5.3	4.3	4.3	5.3	5.0

TGR	EV	DFL	PHT	SPL	SPT	NPT	SEM	EXN	FYP	YP	OPA	LS	BL	COM	THR	GLC	ET
1933	5	76	226	28	24	1.0	5.3	6.6	6.0	5.6	6.0	5.6	5.0	5.0	4.0	5.3	4.5
1964	5	72	230	26	24	1.6	5.3	5.6	5.3	5.3	5.6	6.3	4.6	5.6	4.3	4.6	6.5
2010A	4	82	260	28	28	2.3	4.0	5.3	6.0	5.0	5.3	5.6	5.6	5.5	4.0	4.5	4.0
2017	5	78	236	28	24	1.6	5.0	5.6	6.0	5.3	5.6	5.3	4.6	5.3	3.6	4.6	3.5
2023	4	84	256	26	21	2.0	4.6	5.3	5.6	5.0	5.3	5.3	5.0	5.3	3.6	5.0	4.0
2027	4	82	263	29	23	2.0	3.6	5.6	6.0	4.0	3.6	5.6	5.0	5.3	4.0	5.3	3.0
2032	5	83	246	26	21	1.6	5.0	5.6	6.0	5.3	5.6	5.3	4.6	5.0	3.6	5.0	5.0
2038	4	76	246	24	23	1.6	4.0	6.3	4.6	4.6	4.6	6.0	4.6	5.0	3.6	6.0	4.5
2044	5	66	230	25	17	2.6	5.0	7.0	5.6	5.3	5.3	5.6	5.0	4.0	4.0	5.0	4.0
2049	5	64	220	21	21	2.0	5.0	6.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0	5.3	5.0
2053	6	68	243	27	27	1.6	5.0	6.0	6.0	5.6	6.0	5.3	4.3	4.6	3.6	5.0	5.0

TABLE 6: SUMMARY OF PASSPORT DATA OF FINGER MILLET GERMPLASM COLLECTED FROM ZIMBABWE DURING 1982

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
003	070482	MLE	Mahusekwa	1	NW	18 19	31 10	1487	2	4	Wishu	closed
003A	070482	MLE	Mahusekwa	1	NW	18 19	31 10	1487	2	4		
010	070482	MLE	Mahusekwa	2	NW	18 16	31 11	1487	2	4	Madura	
020	080482	MLE	Makumbe	4	W	17 31	31 13	1450	2	4	Madura	
022	080482	MLE	Makumbe	1	E	17 32	31 17	1400	2	4	Chilomoto	Weedy
034	080482	MLE	Makumbe	6	NE	17 29	31 19	1150	2	4	Nhuri	incurved
035	140482	MSV	Chibi	19	E	20 23	30 90	750	2	4	Chikumbi	open
036	140482	MSV	Chibi	19	E	20 23	30 40	750	2	4	Mutambara	curved
042	140482	MSV	Chibi	19	E	20 23	30 40	750	2	4	Mutambara	curved
047	140482	MSV	Chibi	3	E	20 18	30 34	750	3	4		
054	140482	MSV	Chibi	9	N	20 12	30 26	950	3	4		
070	150482	MSV	Gutu	20	NE	19 39	31 17	1180	2	4	Garindi	open panicle
072	150482	MSV	Gutu	20	NE	19 34	31 17	1180	2	4	Chiutsi	closed
073	150482	MSV	Gutu	20	NE	19 31	31 17	1180	2	4	Nyiminya	incurved
074	150482	MSV	Gutu	20	NE	19 34	31 17	1180	2	4	Showi	
083	150482	MSV	Gutu	20	NE	19 34	31 17	1180	2	4	Showi	
084	150482	MSV	Gutu	32	NE	19 32	31 22	1100	2	4		
104	150482	MSV	Gutu	15	E	19 36	31 28	1100	2	4	Chifumbata	
113	150482	MSV	Gutu	30	S	19 49	31 18	1300	2	4	Ndundu	incurved
117	150482	MSV	Gutu	41	S	19 51	31 22	1250	2	4	Chimukungeshwe	closed
125	160482	MSV	Bikita	20	N	19 45	31 40	1050	2	4	Chikumbu	incurved
127	160482	MSV	Bikita	42	E	20 00	31 50	900	2	4	Mutangatsapi	open
128	160482	MSV	Bikita	42	NE	20 00	31 50	900	2	4	Chifumbata	incurved
145	170482	MSV	Nagas	12	S	20 20	31 51	650	2	4	Nyenganyenga	open
146	170482	MSV	Magaisa	12	S	20 26	31 51	650	2	4	Chikumba	closed
164	190482	MSV	Kyle	3	E	20 15	31 03	1100	2	4	Chikumba	
189	190482	MSV	Kyle	28	S	20 25	31 03	800	2	4		
190	190482	MSV	Kyle	28	S	20 25	31 03	800	1	1		Weedy
196	190482	MSV	Kyle	28	S	20 25	31 03	800	1	1		Weedy
201	200482	MSV	Lundi	5	S	20 54	30 45	565	3	4	Chikumba	open

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
209A	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Chikumba	
209B	200482	MSV	Neshuro	2	SW	20 56	30 38	600	3	4	Matamba	
215	200482	MSV	Neshuro	34	W	21 03	30 26	640	3	4	Matamba	
218	200482	MSV	Neshuro	65	S	21 13	30 21	650	3	4	Ndundu	
263	230482	MSV	Zaka	36	SE	20 31	31 31	570	2	4	Chikwai	
266	260482	MSV	Turgwana	6	S	20 29	30 42	770	2	4	Chikwai	
267	260482	MSV	Turgwana	6	S	20 29	30 42	770	2	2		
276	260482	MSV	Turgwana	13	S	20 33	30 42	760	2	4		
283	260482	MSV	Berejena	11	W	20 37	30 37	740	3	4		open
294	260482	MSV	Turgwana	36	S	20 44	30 43	700	2	4		open
295	290482	MSV	Masvingo	17	N	19 56	30 51	1200	3	4	Garindi	
303	290482	MSV	Masvingo	23	N	19 53	30 52	1200	2	4	Chinhuri	closed, good
304	290482	MSV	Masvingo	23	N	19 33	30 51	1200	2	4	Ndundu	open
312	290482	MSV	Masvingo	36	N	19 46	30 58	1300	2	4		with weedy
313	290482	MSV	Masvingo	36	N	19 46	30 58	1300	2	2		from 312
316A	290482	MSV	Masvingo	43	N	19 46	30 57	1300	3	4	Cheshena	incurved
317B	290482	MSV	Masvingo	43	N	19 46	30 57	1300	3	4	Ndundu	open
326	290482	MSV	Masvingo	43	N	19 46	30 57	1300	3	4	Ndundu	open
327	300482	MSV	Zaka	7	S	20 24	31 27	680	3	4	Bunga	open
350	300482	MSV	Zaka	23	SW	20 27	31 20	720	2	4	Chikumbe	
362	300482	MSV	Zaka	6	N	20 19	31 26	850	2	4		
367	300482	MSV	Zaka	22	N	20 13	31 24	960	3	4		
374	010582	MDL	Charter	0		19 15	20 50	1300	8		Junga	closed
379	010582	MDL	Charter	0		19 15	20 50	1300	8		Junga	closed
387	010582	MTN	Inyathi	0		19 45	28 45	1250	8		Chifumkbata	incurved
389	010582	MTN	Hwange	0		18 30	26 35	900	8			
390	010582	MTN	Hwange	0		18 30	26 35	900	8	4		
402	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Madura	
403	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Matangatsapi	
409	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Matangatsapi	
410	010582	MDL	Zvishavane	0		20 20	30 05	1200	8	4	Matangatsapi	
422	010582	MTN	Nkayi	0		19 05	28 50	1200	8	4		
427	010582	MDL	Chilimanzi	0		19 40	30 45	1400	8	4		
440	010582	MDL	Belingwe	0		20 35	30 01	1060	8	4		
446	010582	MTS	Tsholotsho	0		19 50	27 45	1050	8	4		

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451	010582	MTS	Palendeba	0		19 45	26 90	900	8	4		
462	010582	MDL	Kwekwe	0		19 00	29 50	1200	8	4		
468	010582	MDL	Shurugwi	0		19 50	30 05	1300	8	4	Chanyiminya	
469	010582	MDL	Shurugwi	0		19 50	30 05	1300	8	4	Shana	
470	010582	MDL	Shurugwi	0		19 50	30 05	1300	8	4	Ndundu	
493	050582	MNL	Gatarest	1	E	20 03	32 50	700	2	4		
504	050582	MNL	Gatarest	3	E	20 04	23 42	700	3	4	Chabodeni	early
505	050582	MNL	Gatarest	3	E	20 04	23 42	700	3	4	Chabodeni	early
506A	050582	MNL	Gatarest	7	SE	20 04	32 50	750	2	4	Chitende	incurved
506B	050582	MNL	Gatarest	7	SE	20 04	32 50	750	2	4	Chinyaushe	open
507	050582	MNL	Gatarest	7	SE	20 04	32 50	750	2	4	Chinyaushe	open
509A	050582	MNL	Gatarest	5	SE	20 04	32 47	700	2	4	Chitende	closed
509B	050582	MNL	Gatarest	5	SE	20 04	32 47	700	2	4	Chinyaushe	open
510	060582	MNL	Rusitu	1	E	20 05	32 52	1000	2	4	Munyaushe	open
511	060582	MNL	Rusitu	1	W	20 03	32 50	1000	2	4	Chitende	
514	060582	MNL	Rusitu	0	W	20 05	32 52	1000	2	4		mixed
520	060582	MNL	Rusitu	3	E	20 02	32 53	960	2	4	Shirichena	closed
521	060582	MNL	Rusitu	3	E	20 02	32 53	960	2	4	Chiyaushe	
524	060582	MNL	Rusitu	5	E	20 01	32 55	980	2	4		
526	060582	MNL	Rusitu	13	E	20 01	32 57	1020	3	4	Chitinde	incurved
550	070582	MNL	Mhedziwabc	2	W	19 34	32 34	1030	3	4	Mutangatsapi	incurved
569	070582	MNL	Mhedziwabc	2	W	19 34	32 34	1030	3	4	Mutangatsapi	incurved
570	070582	MNL	Mhedziwabc	2	W	19 34	32 34	1030	3	4	Mutangatsapi	incurved
596A	080582	MNL	Chikukwabc	3	E	19 41	32 57	1500	2	4		
584	100582	MNL	Tamandayi	2	NE	20 18	32 49	700	3	4	Chitende	
590	100582	MNL	Tamandayi	2	NE	20 18	32 49	700	3	4	Chitende	
605	100582	MNL	Tamandayi	1	S	20 18	32 49	700	3	4	Chimbembwe	open
606	100582	MNL	Tamandayi	1	S	20 18	32 49	700	3	4	Chitende	closed
611	100582	MNL	Tamandayi	2	S	20 18	32 49	700	2	4		
615	100582	MNL	Tamandayi	13	SW	20 21	32 45	1200	3	4		
622	100582	MNL	Tamandayi	18	SW	20 21	32 46	900	3	4	Nbembwe	closed
629	110582	MNL	Mt Silinda	2	S	20 26	32 43	980	3	4		
639	110582	MNL	Mt Silinda	8	S	20 26	32 45	860	3	4	Chikumbo	
647	110582	MNL	Mt Silinda	8	S	20 26	32 45	860	3	4		
651	110582	MNL	Mt Silinda	8	S	20 26	32 45	860	3	4	Chigarawakima	

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665	170582	MDL	Crossroads	25	W	18 53	29 07	1000	3	4	Ndundu	closed
656	170582	MDL	Crossroads	24	W	18 53	29 07	1000	3	4	Gwezera	open
669	170582	MDL	Crossroads	33	W	18 50	29 03	1000	3	4	Ndundu	closed
682	170582	MDL	Crossroads	39	W	18 48	28 58	1000	3	4	Ndundu	Kalahari sand
692	180582	MDL	Zhombe	23	E	18 47	29 26	1150	3	4	Ndundu	closed
717	180582	MDL	Zhombe	5	S	18 41	29 19	1180	2	4	Cultivated	includes weedy
718	180582	MDL	Zhombe	5	S	18 41	29 14	1180	2	2	Weedy type	from 717
722	180582	MDL	Zhombe	28	N	18 35	29 25	1080	3	4	Mandur..	open
737	180582	MDL	Zhombe	42	N	18 25	29 32	1020	3	4	Nzenza	closed
739	190582	MDL	St Joseph	5	S	19 45	30 37	1150	3	4	Ndundu	
748	190582	MDL	St Joseph	1	E	19 43	30 38	1180	3	4	Shana	open
749	190582	MDL	St Joseph	1	E	19 43	30 38	1180	3	4	Garindi	
750	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4	Chifumbata	
760	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4		long fingers
761	190582	MDL	St Joseph	19	S	19 50	30 33	1100	3	4		closed fingers
764	190582	MDL	Chilimanzi	0		19 32	30 42	1400	3	4		
766	200582	MDL	Saints Sch.	1	N	18 54	31 02	1490	3	4		
782	200582	MDL	Saints Sch.	1	N	18 54	31 02	1490	2	4	Madura	
785	200582	MDL	Saints Sch.	1	N	18 54	31 02	1490	2	2		Weedy
786	200582	MDL	Sadza	9	W	19 53	31 24	1420	3	4	Madura	
787	200582	MDL	Sadza	9	W	18 53	31 24	1420	3	4	Mukotosi	
792	200582	MDL	Sadza	9	W	18 53	31 24	1420	3	4	Mukotosi	
797	200582	MDL	Sadza	9	W	19 53	31 24	1420	3	4	Madura	
798	200582	MDL	Sadza	9	W	19 53	31 24	1420	3	4	Mukotosi	
799	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Chibwiti	white grain
808	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Madura	
815	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Madura	
819	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Madura	
826	200582	MDL	Sadza	0		18 53	31 24	1420	3	4	Chizenga	
833	200582	MDL	Sadza	3	N	18 53	31 24	1420	3	4	Madura	
839	210582	MDL	Gokwe	35	W	18 15	28 24	1100	3	4	Ndundu	
851	210582	MDL	Gokwe	39	W	18 14	28 41	1100	3	4	Madura	
859	220582	MDL	Manyoni	10	W	18 10	28 34	1100	3	4		
867A	220582	MDL	Manyoni	19	W	18 07	28 31	1100	3	4	Madura	incurved
867B	220582	MDL	Manyoni	19	W	18 07	28 31	1100	3	4	Ndundu	

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880	220582	MDL	Manyoni	4	W	18 13	28 36	1100	3	4	Ndundu	
884	220582	MDL	Manyoni	14	W	18 08	28 39	1120	3	4	Chibwe	
893	240582	MDL	Mkoba	3	E	19 21	29 33	1300	3	4	Nhuri	
896	240582	MDL	Mkoba	13	NW	19 16	29 28	1300	3	4		
908	240582	MDL	Mkoba	26	W	19 16	29 28	1300	3	4	Madura	
910	240582	MDL	Mkoba	22	W	19 16	29 28	1300	3	4	Isifumbata	
912	240582	MDL	Mkoba	25	NW	19 16	29 28	1300	3	4	Ndundu	
917	240582	MDL	Mkoba	29	NW	19 16	29 18	1300	3	4		open
922	240582	MDL	Muchakata	5	E	19 14	29 58	1300	3	4	Garindi	incurved
928	240582	MDL	Muchakata	5	E	19 14	29 58	1300	3	4	Ndundu	
929	240582	MDL	Muchakata	6	E	19 14	29 58	1300	3	4		
930	240582	MDL	Sadza	2	E	18 53	31 24	1420	3	4	Mukotoshi	
938	240582	MDL	Sadza	2	E	18 53	31 24	1420	3	4	Mukotoshi	
939	240582	MDL	Sadza	2	E	18 53	31 24	1420	3	4	Gwezere	
941	240582	MDL	Sadza	2	E	18 53	31 24	1420	3	4	Gwezere	
949	240582	MDL	Sadza	5	N	18 53	31 24	1420	3	4	Mukotoshi	
951	240582	MDL	Sadza	7	N	18 53	31 24	1420	3	4	Mukotoshi	
954	240582	MDL	Sadza	3	NE	18 53	31 24	1420	3	4	Nzenza	
958	240582	MDL	Sadza	3	NE	18 53	31 24	1420	3	4		white grain
961	240582	MDL	Sadza	2	NW	18 53	31 24	1420	3	4	Madura	incurved
962	240582	MDL	Sadza	2	NW	18 53	31 24	1420	3	4	Nyimynya	
970	240582	MDL	Sadza	2	NW	18 53	31 24	1420	3	4	Nyimynya	
974	240582	MDL	Sadza	0		18 53	31 24	1420	3	4	Mukototsi	
977	240582	MDL	Sadza	2	N	18 53	31 24	1420	3	4	Chisewga	
978	240582	MDL	Sadza	4	N	18 53	31 24	1420	3	4	Mukototsi	incurved
983	240582	MDL	Sadza	8	NE	18 53	31 24	1420	3	4	Mukotots	
987	240582	MDL	Sadza	8	NE	19 53	31 28	1420	3	4	Nzenza	
993	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1001	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1004	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1007	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1014	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1016	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mukototsi	
1018	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Madura	
1022	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Makototsi	

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1023	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Chizenge	
1031	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Mutangodura	
1033	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Garindi	
1034	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Madura	
1039	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Nzenza	
1042	240582	MDL	Mupatsi	5	NE	19 02	31 28	1200	3	4	Nzenza	
1054	260582	MDL	Donga	3	N	19 43	30 10	1250	3	4	Ndundu	
1055	260582	MDL	Donga	3	N	19 37	30 10	1200	3	4	Ndundu	
1067	260582	MDL	Donga	36	NE	19 33	30 16	1200	3	4	Ndundu	
1072	260582	MDL	Donga	36	NE	19 33	30 16	1200	3	4	Ndundu	
1073	260582	MDL	Hanke BC	19	SE	19 44	30 16	1200	3	4	Ndundu	
1088	260582	MDL	Dowon	14	SE	19 50	30 13	1200	3	4	Garindi	
1096	270582	MDL	Masvingo	6	SW	20 46	30 19	750	3	4	Matamba	
1119	270582	MDL	Mataka	1	W	20 05	30 11	760	3	4	Matamba	
1137	270582	MDL	Maranna	32	W	20 44	30 12	850	3	4	Chikumbu	
1148	280582	MDL	Zurubi	7	N	20 26	30 17	850	3	4		
1165	260582	MDL	Shamani	23	N	20 08	29 57	1050	3	4		
1181	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4	Mutangatsapi	early
1182	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4		closed
1192	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4	Kwidzingwi	
1196	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4	Tirigu	
1199	010682	MNL	Tsanzaguru	2	E	18 36	32 05	1320	3	4	Wishu	
1203	010682	MNL	Tsanzaguru	3	SE	18 36	32 05	1320	3	4	Mutangatsapi	white
1210	010682	MNL	Tsanzaguru	6	S	18 36	32 05	1320	3	4	Zhanje	open
1221	010682	MNL	Mutungagole	36	S	18 50	32 03	1100	3	4		
1227	020682	MNL	Nyatate	4	E	18 01	32 39	1190	3	4	Mutangatsapi	
1228	020682	MNL	Nyatate	4	E	18 01	32 39	1190	3	4	Chikena	
1229	020682	MNL	Nyatate	4	E	18 01	32 39	1190	3	4	Mutunhunebute	
1236	020682	MNL	Nyatate	2	W	18 01	32 39	1190	3	4	Kwidzingwi	
1247	020682	MNL	Nyatate	0		17 50	32 39	1190	3	4	Chikena	
1257	020682	MNL	Nyatate	1	NW	17 52	32 57	800	3	4	Chikena	
1261	030682	MNL	Nyaruaka	2	NW	17 52	32 57	800	3	4	Nyagaza	
1276	030682	MNL	Nyanghombe	1	E	17 47	32 50	800	3	4	Kwidzingwi	
1285	030682	MNL	Kute Schl	15	E	17 54	32 52	900	3	4	Kachena	
1288	030682	MNL	Kute Schl	15	E	17 54	32 52	900	3	4	Kachena	

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1289	030682	MNL	Nyamurenda	26	E	17 52	32 52	1200	3	4		
1296	070682	MNL	Samanga	0		18 33	32 46	850	3	4	Kwidzingwi	incurved
1305	070682	MNL	Honde	0		18 34	32 48	850	3	4	Tende	Dwarf
1319	070682	MNL	Honde	0		18 34	32 45	850	3	4	Tende	dwarf
1324	070682	MNL	Honde	5	E	18 36	34 46	900	3	4		closed
1332	070682	MNL	Honde	4	NE	18 36	34 46	900	3	4	Brandaye	
1338	070682	MNL	Honde	4	NE	18 36	34 46	900	3	4	Tende	
1342	070682	MNL	Honde	4	NE	18 36	34 46	900	3	4		
1346	070682	MNL	Honde	4	E	18 36	34 46	900	3	4	Kwidzingwi	closed
1351	070682	MNL	Honde	4	E	18 36	34 46	900	3	4	Tende	
1362	070682	MNL	Gatsi	2	W	18 31	32 44	820	3	4	Tende	closed
1365	070682	MNL	Gatsi	4	E	18 31	32 44	820	3	4	Tende	
1373	070682	MNL	Hauna	3	S	18 27	32 50	800	3	4	Tende	
1381	070682	MNL	Mparutsa	0		18 18	32 48	800	3	4	Chikumbo	
1391	070682	MNL	Sagambe	4	NE	18 18	33 00	700	3	4		
1398	080682	MNL	Mandeya	0		18 27	32 58	750	3	4		
1424	090682	MNL	Machowa	4	NE	20 52	32 13	400	3	4		
1480	150682	MLW	Hombwe	0		17 41	29 95	900	3	4		
1484	150682	MLW	Hombwe	10	SW	17 45	29 42	900	3	4		
1487	150682	MLW	St Ruperts	0		17 45	29 43	900	3	4		
1499	150682	MLW	ST Ruperts	3	NE	17 45	29 43	900	3	4		
1504	150682	MLW	Chipfuvamu	0		17 96	29 29	1000	3	4		
1505	150682	MLW	Chipfuvamu	0		17 46	29 49	1000	3	4	Nhuri	
1515	160682	MLW	Kenzamba	10	SE	17 36	29 32	1000	3	4	early	
1525	160682	MLW	Mapfungwe	15	N	17 33	29 38	880	3	4	Madura	
1527	160682	MLW	Gwidzima	2	E	17 34	29 36	900	3	4	Nhuri	
1538	160682	MLW	Nyare	0		17 26	29 31	900	3	4		
1553	160682	MLW	Obua	0		17 33	29 29	850	3	4		
1557	180682	MLW	Murombedzi	15	N	17 37	30 11	1200	3	4	Madura	
1572	180682	MLW	Chivere	0		17 39	30 02	1100	3	4	Fumbata	
1573	180682	MLW	Chivere	0		17 39	30 02	1100	3	4	Maduraa	open
1580	180682	MLW	Murindagom	0		17 93	30 04	1000	3	4		
1584	180682	MLW	Murindagom	7	S	17 39	30 25	1300	3	4		
1585	180682	MLW	Zinate	1	W	17 41	30 17	1280	3	4	Garinhi	
1593	180682	MLW	Masiyar	2	E	17 48	30 19	1350	3	4	Madura	

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1596	180682	MLW	Masiyar	2	E	17 48	30 19	1350	3	4	Madura	
1597	180682	MLW	Masiyar	2	E	17 48	30 19	1350	3	4	Madura	
1599	180682	MLW	Madzima	2	E	17 46	30 17	1300	3	4		
1600	180682	MLW	Madzima	2	E	17 46	30 17	1300	3	4		
1612	180682	MLW	Madzima	2	E	17 46	30 17	1300	3	4		
1617	210682	MLW	Magunje	8	SE	16 51	29 23	1100	3	4		
1628	210682	MLW	Magunje	8	SE	16 51	29 28	1200	3	4	Pfumbata	
1644	210682	MLW	Magunje	12	NW	16 46	29 24	1100	3	4	Madura	
1660	220682	MLW	Samurkoo	2	N	16 59	29 27	1200	3	4		
1670	220682	MLW	Samurkoo	14	SE	17 07	29 20	1100	3	4		
1671	220682	MLW	Samurkoo	14	SE	17 07	29 20	1100	3	4	Mhuri	
1679	220682	MLW	Samurkoo	14	SE	17 07	29 20	1100	3	4	Pfumbata	
1686	220682	MLW	Mujinga	0		17 11	29 21	1080	3	4		
1695	220682	MLW	Chimusimbe	4	N	17 09	29 29	1100	3	4		
1700	220682	MLW	Chimusimbe	12	N	17 06	29 30	1100	3	4		
1707	220682	MLW	Chimusimbe	12	N	17 06	29 30	1100	3	4		
1718	230682	MLW	Chitake	14	E	16 24	29 39	1100	3	4		
1723	230682	MLW	Chitake	17	E	16 24	29 41	1100	3	4		
1727	230682	MLW	Chitake	14	E	16 22	29 45	1100	3	4		
1730	230682	MLW	Mhondiwa	1	E	16 28	29 39	1200	3	4		
1739	230682	MLW	Mhondiwa	4	E	16 29	29 40	1200	3	4	Pfumbata	
1742	230682	MLW	Mhondiwa	4	W	16 27	29 37	1200	3	4	Chikumbo	
1750	240682	MLW	Kadunga	11	W	16 36	29 46	1200	3	4		
1756	240682	MLW	Kadunga	11	W	16 36	16 46	1200	3	4		open
1765	240682	MLW	Kadunga	14	N	16 29	16 53	1100	3	4		
1770	240682	MLW	Kadunga	6	E	16 32	16 51	1100	3	4		
1776	240682	MLW	Kadunga	7	S	16 35	16 51	1100	3	4		
1781	240682	MLW	Kadunga	15	SE	16 33	29 54	1100	3	4		
1790	240682	MLW	Kadunga	21	E	16 36	29 56	1100	3	4		closed
1794	240682	MLW	Miami	9	E	16 40	29 50	1100	3	4		
1800	290682	MLC	Manhenga	19	W	17 24	31 12	1150	3	4		
1807	290682	MLC	Manhenga	22	W	17 25	31 11	1200	3	4	Madura	
1808	290682	MLC	Manhenga	22	W	17 25	31 11	1200	3	4	Shangana	
1815	290682	MLC	Manhenga	2	E	17 23	31 20	1150	3	4		
1818	290682	MLC	Kambasha	3	E	17 29	31 20	1200	3	4		open

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1822	290682	MLC	Nyava	6	S	17 35	31 20	1400	3	4		
1830	290682	MLC	Nyava	9	E	17 30	31 27	1300	3	4	Wishu	
1834	290682	MLC	Nyava	9	E	17 32	31 27	1300	3	4	Madura	
1836	300682	MLC	Madziva	6	E	16 59	31 31	1020	3	4		
1842	300682	MLC	Chakonda	4	N	17 07	31 36	950	3	4	Pfumbata	
1854	300682	MLC	Cheshafa	0		17 13	31 37	1100	3	4		
1861	300682	MLC	Madziva	2	E	16 53	31 28	1080	3	4		
1864	300682	MLC	Madziva	8	SW	16 54	31 24	1120	3	4		
1866	300682	MLC	Madziva	20	S	16 57	31 27	1100	3	4		
1871	010782	MLC	Nyamahobo	9	NE	16 40	31 57	900	3	4		open
1872	010782	MLC	Nyamahobo	9	NE	16 40	31 57	900	3	4		closed
1874	010782	MLC	Nyamahobo	2	W	16 43	31 54	900	3	4		
1881	010782	MLC	Nhava Schl	0		16 35	32 10	1000	3	4		
1889	010782	MLC	Nhava Schl	9	N	16 32	32 11	1000	3	4	Pfumbata	closed
1894	010782	MLC	Kasenzi	1	E	16 35	32 14	1000	3	4		
1897	010782	MLC	Nkondi Mt	1	W	16 37	32 17	750	3	4		
1907	010782	MLC	Mary Mt	12	W	16 39	32 24	650	3	4		
1911	010782	MLC	Rushinga	3	N	16 37	32 01	1000	3	4		
1932	020782	MLC	Mukumbura	29	SE	16 25	31 49	900	3	4		
1939	020782	MLC	Sohwe Schl	0		16 30	31 40	1050	3	4		
1944	030782	MLC	Anderson	3	W	16 37	31 49	900	3	4	Madura	
1949	030782	MLC	Chitsato	0		16 32	31 46	880	3	4		closed
1956	030782	MLC	Chawanda	5	E	16 37	31 45	980	3	4	Nhuri	open
1973	030782	MLC	Chawanda	8	E	16 37	31 41	960	3	4	Madura	
1986	040782	MLC	Dotito	1	W	16 33	31 34	960	3	4	Nhuri	open
1994	040782	MLC	Dotito	5	W	16 34	31 35	990	3	4		
1996	040782	MLC	Dotito	9	W	16 33	31 31	990	3	4	Madura	
1997	040782	MLC	Dotito	9	W	16 33	31 31	990	3	4		
2002	040782	MLC	Dotito	24	W	16 30	31 26	1150	3	4		closed
2007	060782	MLC	Mzarabani	10	N	16 22	31 01	410	3	4		
2013	060782	MLC	Mzarabani	25	N	16 18	31 05	400	3	4		
2039	070782	MLC	Chitsungo	10	E	16 16	30 28	400	3	4		
2055	070782	MLC	Angwa	0		16 12	30 17	400	3	4		
2058	080782	MLC	Sipolilo	7	S	16 43	30 45	1250	3	4	Pfumbata	
2067	080782	MLC	Sipolilo	19	S	16 46	30 42	1340	3	4		

TGR	DATE	PROV	TOWN	KM	DR	LAT	LON	ALT	SS	ST	LOCAL NAME	REMARKS
2071	080782	MLC	Sipolilo	10	W	16 42	30 39	1200	3	4		open
2077	080782	MLC	Kachuta	3	E	16 32	30 30	1100	3	4		
2080	080782	MLC	Chigwana	0		16 30	30 29	1150	3	4		
2083	090782	MLC	Madombwe	8	S	17 00	31 05	1200	3	4	Madura	
2088	090782	MLC	Madombwe	10	N	17 52	31 08	1300	3	4		open
2091	090782	MLC	Madombwe	10	N	17 50	31 10	1200	3	4		
2092	090782	MLC	Chaona Schl	4	S	17 47	31 15	1100	3	4		
2093	090782	MLC	Chaona Schl	4	S	17 47	31 15	1100	3	4		

DESCRIPTORS AND DESCRIPTOR STATES FOR FINGER MILLET GERMPLASM EVALUATION

1 TGR: Collectors number assigned to the sample at the time of collecting
the sample

2 EVG: Early Vigour
Recorded 30 days after planting, considering leafiness, leaf blade length,
width and leaf number. Visually scored on a numerical scale
3 Low
5 Intermediate
7 High

3 HBT: Growth Habit
Recorded 30 days after planting on a numerical scale
3 Erect
5 Intermediate
7 Prostrate

4 DFL: Days to Flowering
Number of days from planting to when 50% of the plants flowered

5 PHT: Plant Height
Measured in cm from ground level to the base of the panicle

6 SPN: Number of Spikes per panicle
Number of spikes radiating from the base to the tip of the spike

7 SPL: Spike Length
Measured in cm from the base to the tip of the spike

8 SPW: Spike Width
Measured in mm at the middle of the spike

9 NPT: Number of productive tillers
The number of panicles which bear seed at the time of harvest and
therefore contribute to yield. Immature panicles are not counted

10 STM: Synchrony of Tiller Maturity
Considering the panicle maturity in different tillers of the same plant
3 Synchronous
5 Intermediate
7 Non synchronous

11 PDL: Peduncle Length
Visually scored on 1-9 scale where
3 Poor
5 Average
7 Good

12 OPA: Overall Plant Aspect
Overall agronomic desirability of an accession visually scored as
3 Poor
5 Intermediate
7 High

13 LS: Lodging Susceptibility
Visually scored at maturity
3 No lodging
5 about 25% lodged
7 About 50% lodged

14 COM: Spike Density
Considering the number of grain per unit area and the grain size, it
was scored visually
3 Loose
5 Intermediate
7 Very compact

15 GN: Number of grains per spikelet
Counted in the middle of the spike

16 GLL: Glume Length
Visually scored as
3 Short glumes
5 Intermediate glumes
7 Long glumes

17 GLC: Seed Covering
Visually scored considering the extent of grain covered by glumes
3 Exposed
5 Intermediate
7 Enclosed

18 PS: Panicle Shape
1 Panicles having separated and straight spikes
2 Spikes slightly curved towards the rachis
3 Pronounced curvature of the spikes towards rachis
4 Panicles with curved spikes and resembling a tightly closed fist
5 Panicles having highly curved spikes and resembling a tightly closed fist
6 Coxcomb, highly prolifirated
7 Digitate, spikes spread perpendicular to the peduncle

19 SD: Seed Sculpture
Visually scored as
1 Finely granulated
2 Coarsely granulated
3 Patched

20 FR: Seed Furrow
1 Deep
2 Shallow
3 Absent

21 SC: Seed Colour
1 Light brown
2 Brown
3 Violet

22 SS: Seed Shape
1 Rounded
2 Triangular
3 Cordate

TABLE 7: EVALUATION DATA OF FINGER MILLET GERMPLASM COLLECTED DURING 1982 AND EVALUATED DURING 1984-85 AT GWEBI (MEAN OF 3 REPLICATIONS)

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
10	6.5	3.5	86	105	8	67	12	4.5	5	5	4.5	5	6	6.5	6	5	1	1	2	1	3
22	5.0	4.5	86	115	19	70	10	3.0	4	5	4.5	5	7	5.5	6	6	3	3	2	1	3
34	5.5	4.5	88	105	7	57	11	4.5	5	4	5.5	5	3	8.0	6	5	4	1	1	4	3
35	6.5	4.5	86	100	8	55	12	2.5	4	5	3.5	6	5	6.5	7	6	3	3	2	1	3
36	5.5	4.5	69	82	6	50	12	3.0	4	5	3.5	7	4	6.5	6	6	2	1	2	1	3
47	5.0	5.5	86	95	7	59	12	7.0	5	4	3.5	6	5	7.0	7	7	1	1	2	1	2
54	5.5	4.5	84	92	10	47	11	6.5	5	4	4.0	5	4	6.0	6	5	4	1	2	1	3
72	6.5	4.0	84	92	10	56	11	3.0	5	5	6.0	4	6	6.5	6	6	3	1	3	1	1
73	6.0	4.0	85	85	7	55	10	5.0	3	3	4.0	4	5	6.5	5	5	3	1	1	1	3
84	6.5	3.5	83	100	10	59	11	8.5	5	4	2.5	6	4	6.5	6	2	2	1	2	1	3
113	6.0	4.0	84	90	7	46	10	5.0	5	5	5.0	5	4	6.5	4	4	3	1	2	2	2
127	7.0	3.0	78	105	9	55	11	5.0	5	5	4.0	4	4	6.5	4	4	3	1	2	1	1
128	6.5	3.5	86	97	7	51	11	5.5	5	5	3.0	3	5	6.0	5	4	2	1	2	3	2
164	5.0	4.5	85	97	9	35	11	6.0	6	6	6.0	4	4	5.5	5	5	4				
209A	5.0	4.0	86	95	8	50	11	6.0	5	5	5.0	3	4	7.0	6	5	4	1	1	1	3
294	6.5	3.0	84	100	9	56	11	5.0	5	5	5.5	5	6	6.5	8	7	2	2	2	2	3
295	5.5	4.0	86	110	8	54	11	5.5	4	5	5.5	4	5	5.0	6	6	2	1	3	1	1
303	5.5	5.5	82	97	8	45	11	4.5	4	4	3.5	6	5	6.0	6	6	2	1	2	2	3
304	6.5	4.0	82	87	7	49	11	5.5	5	4	4.0	6	5	6.0	7	7	3	1	2	2	3
316A	6.5	3.5	82	95	9	45	10	5.5	4	4	4.0	7	5	6.0	5	6	3	3	2	2	3
317B	7.0	3.0	79	105	8	47	10	3.5	5	5	5.0	6	4	6.0	6	6	2	2	2	2	1
326	7.0	2.5	86	90	8	51	10	3.0	5	4	5.5	5	5	6.5	5	5	4	1	2	1	3
327	7.5	2.5	80	75	7	53	11	2.5	4	5	4.0	6	4	5.0	4	5	4	3	1	1	3
362	5.5	4.0	80	97	7	59	10	5.0	4	5	4.0	5	6	5.0	6	6	2	3	1	2	3
367	5.0	5.5	86	102	8	46	11	4.0	4	5	6.0	4	4	6.0	5	4	2	1	2	1	3
389	6.0	4.5	85	85	9	49	10	4.5	3	4	5.5	3	6	5.0	7	5					
403	5.5	4.0	78	85	9	51	11	4.5	4	5	5.5	3	4	6.0	6	6	2	3	2	1	3
409	5.5	4.5	86	90	9	57	11	6.0	4	4	4.5	4	5	3.5	6	7	2	1	1	1	3
410	5.5	4.5	88	95	10	55	10	6.5	4	5	6.5	4	4	8.0	7	6	4	2	1	1	3
427	6.5	3.0	85	95	9	54	11	6.0	5	5	5.5	3	4	6.0	6	6	3	1	1	3	3

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
446	6.5	3.0	95	95	6	52	10	7.0	5	4	4.0	4	5	7.0	7	6	3	1	1	1	3
451	6.5	3.0	80	85	8	46	11	7.5	5	4	4.5	5	5	5.0	5	4	3	1	2	1	3
462	7.0	3.0	85	100	9	60	12	5.5	5	5	4.5	4	5	5.5	5	6	3	3	2	1	1
468	6.5	3.0	83	92	8	52	10	5.5	4	5	3.0	7	6	5.0	6	4	3	3	3	1	2
469	7.0	2.5	76	85	7	71	10	6.0	4	5	3.0	8	6	5.5	6	6	2	3	1	1	3
470	7.0	2.5	86	107	8	53	11	13.0	4	5	3.5	7	6	6.0	6	6	2	3	3	2	1
493	4.0	5.5	97	102	8	54	12	2.5	3	4	5.0	5	3	7.0	4	5	5	1	3	3	3
504	3.0	7.0	83	75	8	41	9	5.5	4	4	5.0	3	5	5.5	5	5	3	1	2	1	3
505	3.0	7.0	79	8[illegible]	9	53	9	13.0	4	5	4.5	3	7	5.0	6	6	1	1	1	1	2
506A	3.0	7.0	94	100	8	48	8	7.0	5	5	4.0	3	7	4.0	8	7	1	3	1	1	3
507	3.5	6.5	83	90	8	57	10	5.5	5	5	4.0	3	5	5.0	6	6	3	3	2	1	1
509A	3.0	7.0	85	95	8	51	10	9.0	5	5	4.5	3	5	6.0	5	5	3	3	2	1	3
510	3.0	7.0	87	87	8	64	9	13.5	4	5	4.0	3	6	5.5	7	7	1	1	1	1	2
511	3.5	6.5	87	90	7	58	9	6.5	4	5	4.0	3	7	4.5	7	7	1	1	3	1	1
514	4.5	5.0	84	90	9	60	9	6.5	4	5	4.0	3	7	5.0	7	7	3	1	2	1	2
520	5.0	4.5	80	95	12	43	9	12.0	4	4	4.5	4	5	4.0	5	6					
521	5.5	4.0	93	95	8	59	9	9.0	4	4	4.0	3	6	6.0	7	6	2	2	2	1	3
524	6.0	4.0	81	92	8	46	9	5.5	5	4	5.5	3	4	6.5	6	6	2	3	2	3	3
526	6.0	4.0	95	87	8	50	11	10.0	3	5	3.5	3	3	6.5	6	6	3	1	2	1	2
550	5.5	4.5	87	82	8	48	11	11.5	5	5	4.5	3	4	6.5	7	6	3	3	1	1	3
569	6.0	4.0	87	95	7	44	10	8.0	5	5	5.5	3	6	5.0	6	6	1	3	2	1	3
570	5.5	4.5	88	90	11	42	11	7.0	5	7	4.5	3	3	6.0	5	4	3	1	1	1	3
605	4.0	6.5	92	77	8	49	10	5.5	4	4	4.5	3	3	6.0	6	5	3	3	2	3	3
611	4.0	6.0	90	87	9	53	[illegible]	7.5	4	4	4.5	3	7	4.5	6	7	2	3	2	3	3
622	5.5	4.5	89	82	9	48	10	8.0	3	4	4.5	3	3	6.0	6	5	1	1	3	3	1
629	4.5	5.5	86	82	8	39	10	7.0	4	4	5.5	3	4	6.0	6	4	4	3	1	1	3
639	5.5	4.5	92	95	11	53	10	5.5	4	5	5.5	3	5	5.5	4	6	4	3	1	1	3
651	7.0	3.5	87	105	10	56	9	6.5	3	6	4.5	3	6	5.5	7	6	2	1	2	2	3
656	4.5	5.0	88	92	9	57	12	3.5	4	4	5.0	4	5	5.5	6	5	3	3	1	1	3
669	6.0	4.0	93	92	8	57	11	5.5	4	5	5.5	5	4	6.0	6	5	2	1	2	1	3
722	6.0	4.0	86	102	10	53	10	4.0	4	4	4.5	5	5	6.5	6	6	3	1	1	1	3
737	6.0	4.0	86	87	10	53	11	3.5	4	3	4.5	6	3	7.0	6	5	3	3	1	1	3
739	6.5	4.5	92	92	10	50	11	5.5	3	3	5.5	5									
749	6.5	3.5	85	95	7	47	10	7.5	4	5	6.0	3	4	6.5	5	5	4	1	2	2	3
750	6.0	4.0	84	97	9	55	11	6.5	5	5	5.0	4	5	6.0	3	3	3	3	1	1	3

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SFW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
760	4.5	5.5	85	87	10	88	12	5.5	5	5	5.0	4	6	6.5	6	5		3	2	1	3
761	6.5	2.5	86	90	7	38	10	4.5	4	4	5.0	3	4	7.0	5	4	5	1	1	1	3
792	7.0	2.5	84	95	7	55	11	5.5	3	4	5.0	3	5	6.0	4	5	4	1	2	3	1
798	5.0	4.5	80	95	7	41	10	4.0	5	5	5.0	3	5	5.0	5	4	4	1	2	1	1
826	5.5	4.5	89	95	7	59	13	3.0	4	5	5.5	4	3	9.0	5	5	3				
839	5.5	4.5	87	97	8	55	10	4.5	3	5	5.0	3	5	6.5	7	6		3	2	3	3
851	5.5	4.5	87	97	10	40	10	4.0	3	4	5.0	4	3	7.0	5	5	2				
859	6.0	4.0	85	100	9	49	11	4.0	4	5	4.5	5	4	5.5	6	6	3	1	1	1	2
867A	6.0	4.0	86	95	9	61	10	5.0	4	3	4.5	5	5	4.5	5	5	3	1	2	1	2
867B	6.0	4.0	83	85	9	49	10	5.5	4	5	5.0	4	4	7.0	6	6	3	1	2	1	3
860	6.5	3.5	89	95	10	36	11	5.5	3	4	6.0	3	5	6.5	5	5	1				
884	6.5	4.5	84	100	10	51	10	5.0	3	5	5.0	3	5	5.5	6	5	3	1	1	1	2
893	5.0	5.0	86	92	9	48	10	5.0	4	5	6.5	3	4	7.0	6	5	2	3	2	1	3
896	5.0	5.0	83	87	9	56	10	4.0	4	4	3.5	7	6	5.5	6	6	3	3	1	1	3
908	6.5	2.5	82	112	8	70	11	4.0	3	4	3.5	6	5	7.0	5	5	2	1	2	1	3
912	5.5	4.5	78	92	10	56	11	3.0	4	6	5.0	3	6	6.0	6	5	2	1	2	1	3
917	5.5	4.5	78	92	10	56	11	4.0	4	5	5.0	4	4	6.0	6	5	1	1	2	1	3
922	6.0	4.0	85	102	9	50	11	5.0	4	4	5.0	4	5	7.5	6	5	3	5	1	2	3
928	7.0	4.0	85	92	8	44	10	7.0	3	6	3.5	7	6	6.5	7	7	3	3	2	1	3
929	7.0	4.0	79	92	7	46	10	5.0	5	4	4.5	3	3	5.0	5	4	2	2	1	2	3
938	6.5	4.0	89	107	9	58	11	5.5	4	6	4.5	3	4	6.5	5	5	3	1	2	1	3
939	6.5	3.5	85	105	8	59	12	4.5	3	5	3.5	4	5	6.0	7	7	3	1	2	1	3
941	6.0	4.0	86	100	11	46	10	6.0	3	4	5.5	4	5	5.0	7	6	3	1	2	1	3
951	5.5	4.0	86	110	7	55	11	5.0	3	3	4.0	4	4	6.0	4	4	2	1	2	3	3
954	5.5	4.0	85	85	10	61	11	6.5	4	4	4.5	5	5	7.0	6	5	2	1	2	1	3
958	5.5	4.0	89	92	8	48	11	5.0	3	4	6.0	4	3	8.0	5	4	2	1	2	1	3
961	6.5	3.5	86	95	10	55	12	4.5	3	4	5.5	3	4	6.0	5	5	2	1	2	3	3
962	6.5	3.5	90	100	7	55	11	5.5	4	3	5.5	3	4	6.5	5	5	2	1	2	1	3
970	5.0	6.0	105	102	8	49	11	5.5	5	6	7.5	3	4	7	6	4	3	3	1	4	3
974	7.0	3.0	87	107	10	56	10	6.5	3	5	4.5	3	5	5.5	6	6	2	1	2	1	3
987	6.5	3.5	89	110	8	64	10	4.0	3	5	4.5	3	5	6.0	5	5					
993	6.5	3.5	94	92	12	64	10	5.5	3	3	3.5	6	7	8.5	8	6	3	1	2	1	2
1001	5.5	4.5	86	92	8	63	10	4.0	3	5	4.5	5	5	6.5	4	6	3	1	2	4	3
1004	5.5	4.5	85	102	10	56	10	5.0	3	5	4.5	4	7	5.5	7	6	3	1	2	1	2
1016	6.0	4.0	85	87	11	53	10	4.0	4	4	5.0	3	3	6.0	5	5	1	1	3	1	1

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
1018	5.5	4.5	86	97	11	79	12	8.0	3	5	4.0	6	6	5.0	6	5	1	3	2	1	3
1022	5.5	4.5	86	105	9	46	11	10.0	3	5	2.0	8	6	6.0	5	5	2	1	3	1	1
1031	6.0	4.0	68	90	6	52	11	6.0	3	4	2.0	8	6	6.0	5	6	2	1	2	2	3
1033	6.5	3.5	91	90	12	51	11	5.5	3	3	4.0	4	1	7.0	6	5	2	3	2	1	3
1034	6.5	3.5	88	102	11	65	11	6.0	3	4	4.5	3	4	8.0	7	5	2	1	2	3	3
1039	5.0	5.0	86	92	10	56	11	6.5	3	4	4.0	3	5	6.5	6	6	2	3	2	2	3
1042	6.0	4.0	85	97	9	53	11	8.0	3	4	3.5	7	5	6.0	5	5	2	1	1	1	3
1054	7.0	3.0	84	95	7	43	10	6.5	4	5	2.0	8	6	5.0	5	5	5	3	1	2	3
1055	7.0	3.0	82	90	8	50	10	7.5	4	5	2.5	8	5	6.5	7	6	2	1	1	1	3
1067	6.5	3.5	82	105	8	73	12	3.5	4	4	2.0	8	6	6.0	5	5	2	1	1	1	3
1072	7.0	3.0	81	110	8	49	10	6.5	4	4	4.5	5	6	7.0	6	7	3	1	1	3	3
1088	6.5	4.0	76	112	8	55	9	7.0	5	5	2.0	8	7	5	7	7	2	3	2	2	3
1096	5.0	5.0	85	92	11	54	11	4.5	5	6	5.5	4	4	6.5	6	5					
1119	4.5	5.5	79	85	9	50	9	7.0	5	4	5.0	4	7	4.0	7	6	2	1	2	1	3
1137	5.0	5.5	85	112	8	41	10	7.5	4	5	5.0	4	4	5.5	6	5	2	1	1	2	1
1148	5.0	5.0	83	102	6	57	11	5.0	3	4	5.0	6	4	6.5	7	7					
1165	5.0	5.0	84	97	7	59	11	4.0	3	4	4.0	7	5	7.0	6	6	4	3	2	2	3
1192	5.0	5.0	85	85	10	39	9	4.5	4	4	5.0	4	5	5	5	5	3	1	2	1	3
1199	5.5	5.0	85	95	8	65	11	7.5	3	5	5.5	3	7	8	7	7	3	3	2	1	3
1203	6.0	5.0	75	100	9	51	11	6.0	4	4	4.5	5	2	7	4	4	5	1	3	4	1
1210	6.0	5.0	84	97	10	45	11	4.5	3	3	5.0	3	5	6	6	6	3	3	1	1	3
1221	6.0	4.5	86	95	10	59	10	4.5	3	4	4.5	6	6	6	7	6	3	2	2	1	3
1227	5.5	4.5	78	77	8	40	8	7.0	4	4	4.0	4									
1229	5.5	4.0	87	107	11	54	11	5.5	3	4	5.5	3	6	8	5	5	3	1	2	1	3
1236	6.5	3.0	86	107	9	55	11	6.5	4	4	4.5	5	5	6	6	5	3	1	1	1	3
1247	6.5	3.0	77	92	9	62	10	6.0	3	5	3.5	7	7	7	7	7	2	1	3	1	1
1257	5.0	6.0	74	92	10	54	10	4.5	4	4	4.0	7	5	6	7	4	4	1	1	1	3
1261	4.5	4.5	91	90	10	63	11	6.0	5	4	6.0	3	5	6	7	6	3	1	1	2	1
1276	5.0	4.5	94	100	9	51	11	4.0	4	4	6.5	3	3	6	4	3	4	1	1	3	3
1288	4.5	5.0	93	92	11	45	10	6.5	4	4	5.5	3	2	6	4	5	5	1	1	3	3
1289	5.5	4.5	89	105	14	51	10	4.5	4	6	5.0	3	5	7	6	4	4	1	2	1	3
1296	5.0	4.0	94	95	11	48	14	4.5	5	6	5.0	3	5	5	4	2	2	3	1	1	3
1305	5.0	4.0	92	87	10	41	10	5.5	5	4	5.0	3	5	6	5	5	3	1	2	1	1
1319	5.5	4.0	90	102	11	47	9	8.5	5	4	5.0	3	2	5	5	5	3	2	1	2	3
1324	5.5	4.0	95	95	9	52	10	5.0	4	4	4.5	3	2	5	5	5	4	1	2	1	1

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
1332	4.5	5.5	105	102	8	59	11	5.5	3	4	8.0	2	5	5	6	2	2	2	2	2	3
1338	5.0	6.0	86	92	9	55	10	8.5	5	4	5.5	3	5	6	7	6	2	1	3	3	1
1342	5.5	5.0	87	97	7	52	10	10.5	4	5	5.0	3		4							
1346	4.5	5.5	88	105	10	50	10	5.5	4	4	6.0	3	3	6	5	4	4	3	2	3	1
1351	5.5	4.0	90	97	10	51	9	6.0	4	3	5.0	3	5	7	4	4	4	1	2	1	3
1362	5.0	4.0	89	90	8	46	10	5.0	4	5	5.0	3	5	7	7	5	3	3	1	1	3
1398	5.0	4.0	93	97	9	53	11	7.0	4	5	5.0	3	3	5	5	4	2	3	3	1	2
1424	6.0	5.0	86	110	8	54	9	5.5	3	4	4.5	6	6	6	6	5	5	3	3	1	1
1480	6.5	3.0	86	110	8	46	11	5.0	3	4	5.0	3	5	6	5	5	3	1	3	1	1
1484	6.0	3.0	88	97	9	52	10	7.0	3	6	5.0	4	6	7	7	5	3	2	1		
1487	6.5	3.5	86	102	8	58	11	6.0	4	4	4.0	7	6	7	5	6	3	3	1	1	3
1499	6.5	3.5	90	100	11	58	10	6.0	4	3	5.0	4	6	7	7	7	3	3	1	1	3
1504	6.5	2.5	86	95	9	45	10	5.5	5	4	5.5	3	5	7	7	7	3	3	1	1	3
1505	6.5	2.5	75	97	5	54	11	5.0	4	5	3.5	6	5	6	7	6	3	3	1	1	3
1515	6.0	3.0	89	105	8	58	11	5.0	4	4	5.0	3	7	6	5	6	3	1	1	3	3
1525	7.0	2.5	95	110	10	51	10	5.5	3	5	5.5	4	5	5	6	5	2	3	1	1	3
1527	6.0	4.0	84	90	9	44	10	7.0	4	5	4.5	6	5	8	4	4	2	3	2	1	3
1538	6.0	4.0	84	90	9	44	10	7.0	4	5	4.5	6	3		6	5	3	1	1	4	3
1553	6.0	4.0	85	105	13	46	11	7.5	4	5	4.5	6	3	5	5	6	4	1	1	1	3
1557	7.0	3.5	88	105	9	80	11	9.5	3	5	5.0	3	7	5	4	4	2	3	2	1	3
1572	7.0	3.5	91	105	6	53	11	7.5	3	4	5.0	3	7	6	5	6	2	1	2	3	3
1580	5.5	4.5	86	100	10	58	11	8.0	4	4	5.0	3	5	5	5	6	1	1	1	1	3
1584	6.0	4.0	86	105	8	54	11	6.5	4	6	5.0	3	6	8	7	6	3	3	1	1	2
1593	5.5	3.5	82	110	7	59	12	9.0	4	4	5.0	3	4	7	4	5	2	3	1	1	3
1597	5.5	5.0	81	100	8	46	9	10.0	4	5	4.5	6	7	5	7	7	3	1	1	3	3
1600	5.5	5.0	83	100	7	55	10	9.5	4	4	3.0	8	6	6	6	6	3	3	2	3	3
1612	5.5	5.0	88	100	9	64	11	10.5	4	7	5.0	5	5	5	5	6	3	1	1	1	3
1617	5.5	5.0	91	97	7	58	10	9.0	4	5	4.5	5	3	7	6	5	3	1	1	1	3
1644	5.5	5.0	91	97	7	58	10	9.0	4	5	4.5	4									
1670	5.5	5.0	91	115	8	59	11	7.0	4	5	5.5	3	5	6	4	3	3	1	3	1	1
1671	5.5	5.0	90	107	7	50	10	11.0	4	5	5.5	3									
1679	5.5	5.0	90	102	8	56	10	7.0	4	5	5.0	4	7	6	7	5	2	1	1	1	3
1686	5.5	4.5	91	107	13	72	10	6.0	4	5	6	7	8	8	8	8	2	1	1	2	3
1695	6.0	4.0	83	97	9	57	10	5.5	4	5	5.0	5	5	7	8	7	3	1	1	2	3
1700	5.5	4.5	87	87	9	65	11	6.0	5	4	6.0	3	6	7	7	6	3	3	1	1	3

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
1718	5.5	4.5	91	102	8	44	10	7.0	4	5	5.0	3	5	5	7	6	3	3	1	1	3
1723	4.5	5.5	91	97	8	61	11	6.0	4	4	4.5	5	4	7	7	6	2	3	2	1	3
1727	5.5	4.5	92	92	8	53	11	8.0	4	5	5.0	4	5	7	7	5	2	3	1	1	3
1730	6.0	4.5	87	97	8	55	11	5.5	3	3	5.0	3	5	6	5	5	3	1	2	1	1
1739	5.5	5.5	96	100	11	50	10	8.0	4	4	4.5	4	8	7	6	5	2	1	2	1	3
1742	5.5	4.5	88	105	8	61	11	4.0	4	[illegible]	5.0	3	5	6	5	4	3	1	2	1	1
1750	5.5	4.5	94	105	10	69	10	6.5	4	5	5.0	5	7	6	6	7	2	1	2	1	3
1756	5.5	4.5	94	90	9	70	10	6.5	4	5	4.5	5	8	6	6	6	3	3	1	1	3
1765	5.0	5.0	93	97	10	66	10	6.5	3	5	4.5	3	8	7	7	5	1	2	1	1	3
1776	5.0	5.0	95	105	8	58	10	7.0	4	6	5.0	3	5	8	7	6	2	1	1	1	3
1790	6.5	4.0	94	107	8	59	11	6.5	4	5	5.0	3	5	7	8	5	3	1	1	3	3
1794	5.5	4.0	90	97	8	50	11	7.0	5	5	5.5	3	3	6	7	7	4	1	2	1	3
1800	5.5	4.0	92	92	10	55	10	6.5	4	5	5.0	3	5	7	7	7	2	1	2	2	3
1807	6.0	3.5	89	95	11	47	10	6.5	4	5	5.5	3	5	6	5	6	3	1	1	1	3
1808	4.5	6.0	86	100	9	63	10	6.5	2	5	2.5	3	5	7	8	5	2	3	1	1	3
1815	4.5	5.0	91	115	8	70	11	5.0	3	4	5.0	3	6	8	6	5	1	1	1	1	3
1818	5.0	5.0	92	105	10	60	11	5.5	5	4	6.0	3	6	7	5	6	3	3	1	1	3
1822	5.5	4.5	92	105	12	53	9	5.5	4	5	4.5	6	5	6	5	5	2	1	2	1	3
1830	5.5	4.5	89	117	10	65	11	5.0	3	5	3.0	7	6	7	8	6	2	3	1	1	3
1834	6.0	4.5	91	107	7	64	11	6.0	4	5	4.5	3	4	7	4	6	3	1	1	3	3
1836	6.0	4.5	86	97	8	57	10	5.0	4	6	5.0	3	6	6	6	6	2	1	3	1	1
1842	6.5	5.0	86	95	8	51	10	5.5	5	5	5.0	3	4	6	6	4	3	1	1	1	3
1854	6.0	5.0	88	87	9	52	8	5.5	4	5	5.0	3	5	6	7	5	3	3	1	1	3
1861	5.5	4.5	92	100	10	53	10	7.0	4	4	5.0	4	6	6	6	6	3	1	1	1	3
1864	5.0	6.0	87	100	8	66	10	5.5	4	5	4.5	5	6	6	6	7	2	1	2	1	1
1866	5.0	6.0	86	100	9	58	11	6.5	5	5	4.5	5	4	7	6	6	2	3	3	1	2
1871	6.5	3.0	86	102	9	55	11	9.5	5	5	5.5	4	5	6	7	5	4	1	1	1	3
1872	6.5	3.0	86	87	8	40	11	4.5	5	5	5.5	3	5	6	5	5	4	3	2	1	3
1874	6.0	3.5	88	105	9	69	12	4.0	3	4	3.0	8	2	8	7	5	3	3	1	1	3
1889	5.5	4.5	93	102	9	60	11	4.5	4	4	3.5	6	4	6	6	6	3	3	2	1	3
1894	6.0	4.0	86	107	8	60	11	5.5	4	5	4.0	5	4	7	5	6	3	3	2	3	3
1907	5.0	5.0	87	110	10	71	11	4.5	4	5	5.5	4	5	8	5	4	2	2	2	1	3
1911	5.[illegible]	5.0	86	105	11	59	10	5.0	4	4	5.0	4	2	5	6	6	2	2	1	2	3
1932	6.[illegible]	4.0	86	102	8	59	11	7.0	4	5	5.0	4	5	6	6	2	2	2	2	2	3
1939	4.5	5.0	36	107	8	67	10	5.0	4	5	5.0	5	6	5	5	1	1	3	2	2	3

TGR	EVG	HBT	DFL	PHT	SPN	SPL	SPW	NPT	STM	PPL	OPA	LS	COM	GN	GLL	GLC	PS	SD	FR	SC	SS
1944	4.5	5.0	88	102	11	53	10	3.5	4	5	5.0	4	5	5	7	7	2	1	3	1	1
1949	6.0	4.5	88	100	8	66	11	6.5	4	5	5.5	3	5	6	6	5	4	3	2	1	3
1956	6.0	4.0	86	102	8	54	10	6.0	3	5	3.0	8	5	6	6	6	3	3	1	2	3
1973	6.5	3.0	86	115	8	66	10	4.0	4	6	4.0	6	6	8	8	8	2	3	1	1	3
1986	6.5	3.0	86	110	9	66	11	5.5	4	5	4.5	6	7	6	8	7	2	3	1	1	3
1996	7.0	3.0	105	102	11	57	10	3.5	4	5	6.0	4	5	6	6	6	2	3	3	1	1
1997	5.5	3.5	88	110	8	79	11	5.0	3	5	5.0	4	5	6	7	8	2	1	1	1	3
2002	5.0	5.5	88	107	9	58	11	6.0	4	5	4.5	6	6	6	7	7	3	3	1	1	3
2007	6.0	3.5	88	97	11	55	11	5.5	4	4	6.0	3	5	6	4	6	2	3	1	3	3
2013	6.5	3.0	86	105	8	56	11	5.0	4	5	4.5	3	6	6	6	6	3	3	2	2	3
2039	6.5	3.0	81	97	7	52	11	5.5	5	5	4.0	5	6	6	6	7	2	3	3	1	2
2055	5.0	6.0	88	105	8	50	10	9.0	4	5	5.0	3	3	8	6	6	2	3	1	1	3
2058	5.5	5.0	88	102	9	63	10	5.0	4	5	4.5	4	5	7	6	5	2	3	1	1	1
2067	6.0	5.0	89	97	9	53	10	5.5	3	5	4.5	4									
2071	6.5	4.0	88	117	10	64	10	6.5	3	4	4.5	6	4	6	6	5	3	3	2	1	3
2077	6.0	4.0	90	110	8	49	10	5.5	4	4	5.0	3	2	5	6	7	3	2	1	2	3
2080	6.0	4.0	90	105	8	56	11	7.5	4	4	4.5	4	5	8	7	8	3	3	1	2	3
2083	6.5	4.0	90	95	10	57	10	8.0	3	4	4.5	5	5	6	6	6	2	1	2	1	3
2091	4.0	6.0	88	100	10	60	9	6.5	4	4	5.5	3									

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