

Descriptors for

Butiá

[*Butia odorata* (Barb. Rodr.) Noblick]



List of Descriptors

<i>Allium</i> (E/S)	2000	<i>Panicum miliaceum</i> and <i>P. sumatrense</i> (E)	1985
Almond (Revised)* (E)	1985	Papaya (E)	1988
Apple* (E)	1982	Peach* (E)	1985
Apricot* (E)	1984	Pear* (E)	1983
Avocado (E, S)	1995	Pearl millet (E/F)	1993
Bambara groundnut (E, F)	2000	Pepino (E)	2004
Banana (E/S/F)	1996	<i>Phaseolus acutifolius</i> (E)	1985
Baobab (E)	2015	<i>Phaseolus coccineus</i> * (E)	1983
Barley (E)	1994	<i>Phaseolus lunatus</i> (E/P)	2001
<i>Beta</i> (E)	1991	<i>Phaseolus vulgaris</i> * (E/P)	2001
Black pepper (E, S)	1995	Pigeonpea (E)	1993
<i>Brassica</i> and <i>Raphanus</i> (E)	1990	Pineapple (E)	1991
<i>Brassica campestris</i> L. (E)	1987	<i>Pistacia</i> (excluding <i>P. vera</i>) (E)	1998
Buckwheat (E)	1994	Pistachio (E/F/A/R)	1997
<i>Capsicum</i> * (E/S)	1995	Plum* (E)	1985
Cardamom (E)	1994	Potato varieties* (E)	1985
Carrot (E/S/F)	1999	Quinoa (E/F/S)	2013
Cashew* (E)	1986	Rambutan (E)	2003
<i>Chenopodium pallidicaule</i> (S)	2005	Rice* (E/P)	2007
Cherimoya (E/S)	2008	Rocket (E/I)	1999
Cherry* (E)	1985	Rye and Triticale* (E)	1985
Chickpea (E)	1993	Safflower* (E)	1983
<i>Citrus</i> (E/F/S)	1999	Sesame* (E)	2004
Coconut (E)	1992	<i>Setaria italica</i> and <i>S. pumila</i> (E)	1985
Coffee (E/S/F)	1996	Shea tree (E)	2006
Cotton (Revised)* (E)	1985	<i>Sorghum</i> (E/F)	1993
Cowpea* (E)	1983	Soyabean* (E/C)	1984
Cultivated potato* (E)	1977	Strawberry (E)	1986
Date palm (F)	2005	Sunflower* (E)	1985
Durian (E)	2007	Sweet potato (E/S/F)	1991
<i>Echinochloa</i> millet* (E)	1983	Taro (E/F/S)	1999
Eggplant (E/F)	1990	Tea (E/S/F)	1997
Faba bean* (E)	1985	Tomato (E/S/F)	1996
Fig (E)	2003	Tree tomato (E)	2013
Finger millet* (E)	1985	Tropical fruit* (E)	1980
Forage grass* (E)	1985	Ulluco (S)	2003
Forage legumes* (E)	1984	<i>Vigna aconitifolia</i> and <i>V. trilobata</i> (E)	1985
Grapevine (E/S/F)	1997	<i>Vigna mungo</i> and <i>V. radiata</i> (Rev.)* (E)	1985
Groundnut (E/S/F)	1992	Walnut (E)	1994
Hazelnut (E)	2008	Wheat (Revised)* (E)	1985
Jackfruit (E)	2000	Wheat and <i>Aegilops</i> * (E)	1978
Kodo millet* (E)	1983	White clover (E)	1992
<i>Lathyrus</i> spp. (E)	2000	Winged bean* (E)	1979
Lentil* (E)	1985	<i>Xanthosoma</i> * (E)	1989
Litchi (E)	2002	Yam (E/S/F)	1997
Lupin* (E/S)	1981		
Maize (E/S/F/P)	1991		
Mango (Revised) (E)	2006		
Mangosteen (E)	2003		
<i>Medicago</i> (Annual)* (E/F)	1991		
Melon (E)	2003		
Mung bean* (E)	1980		
Oat* (E)	1985		
Oca* (S)	2001		
Oil palm (E)	1989		

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[*Butia odorata* (Barb. Rodr.) Noblick]

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PREFACE

The ‘**Descriptors for Butiá [*Butia odorata* (Barb. Rodr.) Noblick]**’ were developed by Claudete C. Mistura, Rosa Lia Barbieri and Caroline Marques Castro, as part of the results of the PhD research project “Characterization of natural populations of *Butia odorata* in the Pampa Biome” (2013), and subsequent investigations on the diversity of butiá by the authors. Information on characteristics of wild species for the elaboration of the descriptors has been mostly based on personal experience of the authors and literature research findings. The draft version prepared in the Bioversity internationally accepted format for descriptor lists was circulated among a number of international experts for their comments with substantial contribution from Dr Charles Clement. The scientific overview of this document was provided by Stefano Padulosi and the technical advice by Adriana Alercia who managed the whole development process, both from Bioversity International. A full list of the names and addresses of those involved in the production of this publication is given in the *Contributors* section.

The concept of crop descriptors has evolved over the years in response to changes in users’ needs. This is a first attempt to combine a documentation system traditionally used in controlled environments (genebanks, breeding institutes) with an approach that involves people and their knowledge ‘in the field’.

This descriptor list is an important resource for integrating both, biology and traditional knowledge in a standardized format.

Although the list is primarily targeted at the plant genetic resources community, to increase the range of knowledge of butiá recorded during plant collection, its widespread use by others, including communities, is encouraged to further the utilization of this Brazilian native palm.

Highly discriminating descriptors are **highlighted** in the text and are indicated by an asterisk (*).

Bioversity International (formerly known as IPGRI) encourages the collecting of data for all five types of descriptors (see Definitions and Use of the Descriptors), whereby data from the first four categories—*Passport, Management, Environment and Site*, and *Characterization*—should be made available for any accession. The number of descriptors selected in each of the categories will depend on the crop and their importance to the crop’s description. Descriptors listed under *Evaluation* allow for a more extensive description of the accession, but generally require repeated trials over a period of time.

Although the suggested coding should not be regarded as the definitive scheme, this format represents an important tool for a standardized characterization system and is promoted by Bioversity throughout the world.

This descriptor list provides an international format and thereby produces a universally understood ‘language’ for plant genetic resources data. The adoption of this scheme for data encoding, or at least the production of a transformation method to convert other schemes into the Bioversity format, will produce a rapid, reliable, and efficient means for information storage, retrieval and communication, and will assist with the use of germplasm. It is recommended, therefore, that information should be produced by closely following the descriptor list with regard to ordering and numbering descriptors, using the descriptors specified and using the descriptor states recommended.

This descriptor list is intended to be comprehensive for the descriptors it contains. This approach assists with the standardization of descriptor definitions. Bioversity does not, however, assume that curators will characterize accessions of their collection using all descriptors given. Descriptors should be used when they are useful to curators for the management and maintenance of the collection or to the users of plant genetic resources, or both. To this end, highly discriminating descriptors are listed at the beginning of the *Characterization* section and are highlighted in the text to facilitate selection of descriptors.

The 'FAO/Bioversity List of Multi-crop Passport Descriptors' (Alercia *et al.* 2012) was developed to provide consistent coding schemes for common passport descriptors across crops. They are marked in the text as [MCPD]. Owing to the generic nature of the multicrop passport descriptors, not all descriptor states for a particular descriptor will be relevant to a specific crop.

In Annex I, the reader will find a 'Collecting form for butiá that will facilitate data collection.

Any suggestions for improvement of the 'Descriptors for Butiá will be highly appreciated by Bioversity and Embrapa Temperate Agriculture.

INTRODUCTION

Common names of butiá in different languages found in literature

Portuguese	Butiá, butiazeiro
English	Jelly palm, pindo palm
Spanish	Palma butiá, butiá

Increasing demand for new aromas, flavours and textures in fruits is recorded in the international market, and Brazil has an immense potential to meet those needs, due to its huge biodiversity and environmental diversity (Schwartz *et al.* 2010).

Among the Brazilian fruit genetic resources that can support the expansion of market potentials, *Butia odorata* (Barb. Rodr.) Noblick, known as ‘jelly palm’ and originating from southern Brazil and Uruguay, deserves to be highlighted (Noblick 2011). Its fruit, known as “butiá”, is appreciated for fresh consumption and used to produce jellies, ice creams, chocolates, mousses, juices and liqueurs. High levels of minerals are present in the fruits, especially iron, manganese and potassium. The fruits are source of bioactive compounds, and have high concentrations of total phenolics, vitamin C and carotenoids (Fonseca 2012). Resistant fibres are present in the leaves, which have been used to produce various handicrafts, an alternative source of income for farmers. The plants are also used as ornamentals, in rural and urban landscaping. Furthermore, the production of good quality oils from its seeds could be another income generating opportunity for this multi-purpose palm (Rossato 2007). The use of this plant is closely linked with the culture of farmers in southern Brazil. The fact that both its genetic diversity and associated knowledge are under severe erosion is of great concern for members of both the scientific and local communities.

The *Butia* genus comprises 20 species which are distributed in Brazil, Uruguay, Paraguay and Argentina (Lorenzi *et al.* 2010). *B. odorata* occurs in the grasslands of southern Brazil and Uruguay.

Four genebanks conserve germplasm in Brazil: three are concerned with *ex situ* conservation, and one with *in situ*. The latter was established to safeguard a population composed by more than 60,000 adult palms, most of them older than 150 years, distributed over an area of 750 ha belonging to a private farm (Mistura *et al.* 2015).

Enhancement of conservation (*ex situ* and *in situ*) of butiá is instrumental to its sustainable use. In this regard, farmers and breeders must have access not only to a wide range of species, but also to the essential information about the traits that these species possess, which is highly strategic in promoting their utilization. Accurate characterization and evaluation data are therefore necessary, especially if these can be presented in a user-friendly and standardized Bioversity format such as the one followed through this descriptor list.

DEFINITIONS AND USE OF THE DESCRIPTORS

Biodiversity uses the following definitions in genetic resources documentation:

Passport descriptors: These provide the basic information used for the general management of the accession (including registration at the genebank and other identification information) and describe parameters that should be observed when the accession is originally collected.

Management descriptors: These provide the basis for the management of accessions in the genebank and assist with their multiplication and regeneration.

Environment and site descriptors: These describe the environmental and site-specific parameters that are important when characterization and evaluation trials are held. They can be important for the interpretation of the results of those trials. Site descriptors for germplasm collecting are also included here.

Characterization descriptors: These enable an easy and quick discrimination between phenotypes. They are generally highly heritable, can be easily seen by the eye and are equally expressed in all environments. In addition, these may include a limited number of additional traits thought desirable by a consensus of users of the particular crop.

Evaluation descriptors: The expression of many of the descriptors in this category will depend on the environment and, consequently, special experimental designs and techniques are needed to assess them. Their assessment may also require complex biochemical or molecular characterization methods. These types of descriptors include characters such as yield, agronomic performance, stress susceptibilities and biochemical and cytological traits. They are generally the most interesting traits in crop improvement.

Characterization will normally be the responsibility of genebank curators, while evaluation will typically be carried out elsewhere (possibly by a multidisciplinary team of scientists). The evaluation data should be fed back to the genebank, which will maintain a data file.

Highly discriminating descriptors are highlighted in the text and are listed at the beginning of the *Characterization* section.

The following internationally accepted norms for the scoring, coding and recording of descriptor states should be followed:

- (a) the Système International d'Unités (SI);
- (b) the units to be applied are given in square brackets following the descriptor name;
- (c) standard colour charts, e.g. Royal Horticultural Society Colour Chart, Methuen Handbook of Colour, or Munsell Color Chart for Plant Tissues, are strongly recommended for all ungraded colour characters (the precise chart used should be specified in the section where it is used);

(d) the three-letter abbreviations from the *International Standard (ISO) Codes for the representation of names of countries* are used
(<http://unstats.un.org/unsd/methods/m49/m49alpha.htm>)

(e) quantitative characters, i.e. those that are continuously variable, should preferably be measured quantitatively. Alternatively, in cases where it is difficult to measure quantitatively, it is acceptable to score instead on a 1–9 scale, where:

1	Very low	6	Intermediate to high
2	Very low to low	7	High
3	Low	8	High to very high
4	Low to intermediate	9	Very high
5	Intermediate		

is the expression of a character. The authors of this list have sometimes described only a selection of the states, e.g. 3, 5 and 7 for such descriptors. Where this has occurred, the full range of codes is available for use by extension of the codes given or by interpolation between them, e.g. in Section 10 (*Biotic stress susceptibility*), 1 = very low susceptibility and 9 = very high susceptibility;

(f) when a descriptor is scored using a scale, such as in (e), '0' would be scored when (i) the character is not expressed; (ii) a descriptor is inapplicable. In the following example, '0' will be recorded if an accession does not have leaf hairs:

Young leaf hairiness

Observed on the upper side of the leaf

0	Absent
1	Slightly hairy
2	Hairy
3	Very hairy

(g) absence/presence of characters is scored as in the following example:

Presence of stone cell aggregates in mesocarp

0	Absent
1	Present

(h) blanks are used for information not yet available;

- (i) for accessions which are not generally uniform for a descriptor (e.g. mixed collection, genetic segregation), the mean and standard deviation could be reported where the descriptor is continuous. Where the descriptor is discontinuous, several codes in the order of frequency could be recorded; or other publicized methods can be utilized, such as Rana *et al.* (1991) or van Hintum (1993), that clearly state a method for scoring heterogeneous accessions;
- (j) dates should be recorded numerically as -hyphens or '00' [double zero]. (e.g. 1975----, 19750000; 197506--, 19750600).

PASSPORT

All descriptors listed under Passport, belonging to the multicrop passport descriptors category, are indicated in the text as [MCPD].

1. Accession descriptors

1.1 Institute code [MCPD]

FAO WIEWS code of the institute where the accession is maintained. The codes consist of the 3-letter ISO 3166 country code of the country where the institute is located, plus a number. The current set of institute codes is available from <http://apps3.fao.org/wiews/wiews.jsp>.

1.2 Accession number [MCPD]

This number serves as a unique identifier for accessions within a genebank, and is assigned when a sample is entered into the genebank collection. Once assigned this number should never be reassigned to another accession in the collection. Even if an accession is lost, its assigned number should never be reused. Letters should be used before the number to identify the genebank or national system (e.g. CGN indicates an accession from the genebank in Wageningen, the Netherlands; PI indicates an accession within the USA system).

1.2.1 Local plant number

This identifies a single plant within a population of plants having the same accession number. It may be any combination of plot identity, row number, or tree position within the row.

1.3 Donor institute code [MCPD]

FAO WIEWS code of the donor institute. (See instructions under *Institute code*, 1.1).

1.3.1 Donor institute name

Name of the donor institute (or person). This descriptor should be used only if DONORCODE cannot be filled because the FAO WIEWS code for this institute is not available.

1.4 Donor accession number [MCPD]

Identifier assigned to an accession by the donor. (See instructions under *Accession number*, 1.2).

1.5 Other identifiers associated with the accession [MCPD]

Any other identifiers known to exist in other collections for this accession. Use the following format: INSTCODE:ACCENUMB;INSTCODE:identifier;... INSTCODE and identifier are separated by a colon without space. Pairs of INSTCODE and identifier are separated by a semicolon without space. When the institute is not known, the identifier should be preceded by a colon.

1.6 Genus [MCPD]

Genus name for taxon. Initial uppercase letter required (e.g. *Butia*).

1.7 Species [MCPD]

Specific epithet portion of the scientific name in lowercase letters (e.g. *odorata*). Only the following abbreviation is allowed: 'sp.'

1.7.1 Species authority [MCPD]

Provide the authority for the species name [e.g. (Barb. Rodr.) Noblick].

1.8 Subtaxon [MCPD]

Subtaxon can be used to store any additional taxonomic identifier. The following abbreviations are allowed: 'subsp.' (for subspecies); 'convar.' (for convariety); 'var.' (for variety); 'f.' (for form); 'Group' (for 'cultivar group').

1.8.1 Subtaxon authority [MCPD]

Provide the subtaxon authority at the most detailed taxonomic level.

1.9 Ancestral data [MCPD]

Information about either pedigree or other description of ancestral information (i.e. parent variety in the case of mutant or selection).

1.10 Accession**1.10.1 Accession name** [MCPD]

Either a registered or other designation given to the material received other than the *Donor accession number*, **1.4** or *Collecting number*, **2.2**. First letter uppercase. Multiple names are separated by a semicolon without space. Example: Accession name: Bogaty;Symphony;Emma.

1.10.2 Synonyms

Include here any names other than the current one. Newly assigned station names are frequently used as synonyms.

1.10.3 Common tree/crop name [MCPD]

Common name of the tree/crop. Example: 'butiá'.

1.11 Acquisition date [YYYYMMDD] [MCPD]

Date on which the accession entered the collection where YYYY is the year, MM is the month and DD is the day. Missing data (MM or DD) should be indicated with hyphens or double zero.

1.12 Accession size

Number or weight of seeds, seedlings, bud sticks, *in vitro* plants, etc. of an accession in the genebank.

1.13 Type of material received

- 1 Seed/seeding
- 2 Vegetative
- 3 Pollen
- 4 *In vitro* culture
- 99 Other (e.g. more than one type, specify in descriptor 1.14 Remarks)

1.14 Remarks

The *Remarks* field is used to add notes or to elaborate on descriptors with value '99' or '999' (= Other).

2. Collecting descriptors**2.1 Collecting institute code** [MCPD]

FAO WIEWS code of the institute(s) collecting the sample. If the holding institute has collected the material, the collecting institute code should be the same as the holding institute code. Multiple values are separated by a semicolon without space. (See instructions under *Institute code*, 1.1).

2.1.1 Collecting institute name [MCPD]

Name of the institute collecting the sample. This descriptor should be used only if Collecting institute code cannot be filled because the FAO WIEWS code for this institute is not available. Multiple values are separated by a semicolon without space.

2.1.1.1 Collecting institute address [MCPD]

Address of the institute collecting the sample. This descriptor should be used only if *Collecting institute code* cannot be filled since the FAO WIEWS code for this institute is not available. Multiple values are separated by a semicolon without space.

2.2 Collecting number [MCPD]

Original identifier assigned by the collector(s) of the sample, normally composed of the name or initials of the collector(s) followed by a number (e.g. 'FM9909'). This identifier is essential for identifying duplicates held in different collections. It should be unique and always accompany subsamples wherever they are sent.

2.3 Collecting date of sample [YYYYMMDD] [MCPD]

Collecting date of the sample where YYYY is the year, MM is the month and DD is the day. Missing data (MM or DD) should be indicated with hyphens or double zero [00].

2.4 Collecting mission identifier [MCPD]

Identifier of the collecting mission used by the *Collecting institute 2.1* or *2.1.1* (e.g. 'CIATFOR-052', 'CN426').

2.5 Country of origin [MCPD]

Three-letter ISO 3166-1 code of the country in which the sample was originally collected (landrace, crop wild relative, farmers' variety), bred or selected (breeding lines, GMOs, segregating populations, hybrids, modern cultivars, etc.) should be used.

2.6 Breeding institute code [MCPD]

FAO WIEWS code of the institute that has bred the material. If the holding institute has bred the material, the breeding institute code should be the same as the holding institute code. Follow the *Institute code 1.1* standard. Multiple values are separated by a semicolon without space.

2.6.1 Breeding institute name [MCPD]

Name of the institute (or person) that bred the material. This descriptor should be used only if BREDCODE cannot be filled because the FAO WIEWS code for this institute is not available. Multiple names are separated by a semicolon without space.

2.7 Location of collecting site [MCPD]

Location information below the country level that describes where the accession was collected, preferably in English. This might include the distance in kilometres and direction from the nearest town, village or map grid reference point (e.g. 7 km south of Porto Alegre in the state of Rio Grande do Sul).

Geographical coordinates

- Latitude and longitude in decimal degree format with a precision of four decimal places corresponds to approximately 10 m at the Equator and describes the point-radius representation of the location, along with geodetic datum and coordinate uncertainty in metres.

2.8 Latitude of collecting site [-/+DD.DDDD] [MCPD]

Latitude expressed in decimal degrees. Positive values are North of the Equator; negative values are South of the Equator (e.g. -44.6975).

2.9 Longitude of collecting site [-/+DDD.DDDD] [MCPD]

Longitude expressed in decimal degrees. Positive values are East of the Greenwich Meridian; negative values are West of the Greenwich Meridian (e.g. +120.9123).

2.10 Coordinate uncertainty [m] [MCPD]

Uncertainty associated with the coordinates in metres. Leave the value empty if the uncertainty is unknown.

2.11 Coordinate datum [MCPD]

The geodetic *datum* or spatial reference system upon which the coordinates given in decimal latitude and decimal longitude are based (e.g. WGS84, ETRS89, NAD83). The GPS uses the WGS84 *datum*.

2.12 Georeferencing method [MCPD]

The georeferencing method used (GPS, determined from map, gazetteer, or estimated using software). Leave the value empty if georeferencing method is not known.

2.13 Elevation of collecting site [m asl] [MCPD]

Elevation of collecting/observation site expressed in metres above sea level. Negative values are allowed.

2.14 Collecting /acquisition source

[MCPD]

The coding scheme proposed can be used at 2 different levels of detail: either by using the general codes (in **boldface**) such as 10, 20, 30, 40, etc., or by using the more specific codes, such as 11, 12, etc.

10 Wild habitat

- 11 Forest or woodland
- 12 Shrubland
- 13 Grassland
- 14 Desert or tundra
- 15 Aquatic habitat

20 Farm or cultivated habitat

- 21 Field
- 22 Orchard
- 23 Backyard, kitchen or home garden (urban, periurban or rural)
- 24 Fallow land
- 25 Pasture
- 26 Farm store
- 27 Threshing floor
- 28 Park

30 Market or shop**40 Institute, Experimental station, Research organization, Genebank****50 Seed company****60 Weedy, disturbed or ruderal habitat**

- 61 Roadside
- 62 Field margin

99 Other (elaborate in descriptor **2.25 Remarks**)**2.15 Biological status of accession**

[MCPD]

100 Wild**200 Weedy****300 Traditional cultivar/landrace****400 Breeding/research material****500 Advanced/improved cultivar** (conventional breeding methods)**600 GMO** (by genetic engineering)**999 Other** (elaborate in descriptor **2.25 Remarks**)**2.16 Collecting source environment**

Use descriptors **6.1** to **6.2** in section **6**.

2.17 Type of sample collected

Type of material collected. If different types of material have been collected from the same source, each sample (type) should be designated with a unique collecting number and a corresponding unique accession number

- 1 Vegetative
- 2 Seed
- 3 Pollen
- 4 *In vitro* culture (specify which part of the plant is used in descriptor **2.25 Remarks**)
- 99 Other (specify which part of the plant in descriptor **2.25 Remarks**)

2.18 Number of plants sampled

Appropriate number of plants collected in the field to produce this accession.

2.19 Number of seeds collected**2.20 General appearance of population**

Provide a subjective assessment of the general appearance of the population:

- 3 Poor
- 5 Medium
- 7 Good

2.21 Population isolation [km]

Straight line distance between two adjacent collecting sites.

2.22 Estimated age of most palms in the population

Estimated by counting rows of leaf debris surrounding the stipe (Geymonat & Rocha, 2009).

2.23 Occurrence of seedlings and juveniles in the area

- 1 Rare
- 2 Common
- 3 Abundant

2.24 Ethnobotanical data

Information on traditional attributes of the sample for collecting runs (community): uses, methods of preparation, native names, healing properties, cultural beliefs and other characteristics.

2.24.1 Ethnic group

Name of the ethnic group of the donor of the sample or of the people living in the collecting area.

2.24.2 Local vernacular name

Name given by farmer to crop and cultivar/landrace/clone/wild form. State local language or dialect if the ethnic group is not provided.

2.24.2.1 Translation

Provide translation of the local name into English, if possible.

2.24.3 History of plant use

- 1 Ancestral/indigenous (always associated with the place and community)
- 2 Introduced (but in unknown distant past)
- 3 Introduced (time of introduction known)

Traditional knowledge about butiá

This section includes descriptors for local/traditional knowledge about key characteristics of *Butia*, as seen by farmers. Please select the most important.

2.24.4 Main reasons for using butiá

Indicate why the plant is used, from a local point of view:

- 1 Cultural/religious characteristics
- 2 Food security/scarcity
- 3 Nutritional properties
- 4 Agronomical characteristics
- 5 Resistance to abiotic stresses
- 6 Resistance to biotic stresses
- 7 Quality traits
- 8 Market demand

2.24.5 Distinguishing traits used by farmers

Select the key traits or characteristics that the farmer uses to distinguish one wild form of the same species or closely related species from another.

- 1 Number of bunches
- 2 Fruit size (fruit width and length)
- 3 Texture of the pulp (amount of fibres)
- 4 Colour of mature fruit
- 5 Fruit flavour
- 99 Other (specify in descriptor 2.27 Remarks)

2.24.6 Part(s) of the plant used

- 1 Fruit
- 2 Leaf
- 3 Tree
- 4 Flower
- 5 Crown
- 6 Stem/trunk/stipe
- 7 Seed
- 99 Other (specify in descriptor **2.27 Remarks**)

Quality traits related to food uses**2.24.7 Organoleptic qualities**

Describe particular organoleptic qualities of the fruit. Multiple values are allowed, separated by a semicolon (;).

- 1 Eating quality
- 2 Taste, flavour (pungent, sweet, acid, bitter, etc.)
- 3 Fragrance intensity
- 4 Flesh texture (firm, juicy, fibrous, etc.)
- 99 Other (specify in descriptor **2.27 Remarks**)

2.24.8 Market traits

- 1 Marketability
- 2 Transportability (Perishability)
- 3 Shelf life/storage ability
- 99 Other (specify in descriptor **2.27 Remarks**)

Socio-economic characteristics**2.24.9 Seed supply system**

- 1 Formal sector
- 2 Self harvested
- 3 Exchanges with relatives, neighbours
- 4 Exchanges between close villages
- 5 Local /regional market
- 6 Wild/naturally occurring

2.24.10 Main use of plant by farmers

Multiple values are allowed separated by a semicolon (;).

- 1 Home consumption (sweets and drinks, animal fodder)
- 2 For direct sale
- 3 For sale through intermediary
- 4 Exchange, neighbour, friends, family
- 5 Nutraceutical use
- 6 Handicrafts
- 7 Ornamental
- 8 Industrial
- 99 Other (specify in descriptor 2.27 Remarks)

2.24.11 Main form of market outlet

- 1 Local
- 2 State
- 3 National
- 4 Regional
- 5 International

2.24.12 Cultural characteristics

Is there any folklore associated with the collected material (e.g. taboos, believes, stories and/or superstitions about butiá)? If so, describe it briefly in descriptor 2.27 Remarks.

- 0 No
- 1 Yes

2.24.13 Prevailing stresses

Information on main associated biotic (pests and diseases) and abiotic (drought, salinity, temperature) stresses.

2.24.14 Mode of reproduction

- 1 Vegetative
- 2 Seed
- 3 Both

2.24.15 Associated flora

Other dominant crop/or wild plant species, including other butiá species, found in and around the collecting site.

2.24.16 Seasonality

- 1 Available only in season/at particular period
- 2 Available throughout the year

2.25 Photograph

Was a photograph(s) taken of the sample/specimen or habitat at the time of collecting? If so, provide an identification number(s) in the descriptor **2.27 Remarks**.

- 0 No
- 1 Yes

2.26 Herbarium specimen

Was a herbarium specimen collected? If so, provide an identification number in descriptor **2.25 Remarks** and indicate in which place (herbarium) the butiá specimen was deposited.

- 0 No
- 1 Yes

2.27 Remarks

Specify here any additional information recorded by the collector or any specific information on descriptors with value "99" or "999" (=Other).

MANAGEMENT

3. Management descriptors

3.1 Accession number (Passport **1.2**)

3.1.1 Local plant number

This identifies a single plant within a population of plants having the same accession number. It may be any combination of plot identity, row number, or tree position within the row.

3.2 Population identification (Passport **2.3**)

Collecting number, pedigree, cultivar name, etc., depending on the population type.

3.3 Accession location in orchard

Enter separate block designations, row numbers and tree numbers within the row for each duplicate tree of each accession if each tree is not identified with a unique local plant number (see descriptor 3.1.1).

3.3.1 Block designation

3.3.2 Row number

3.3.3 Tree number within the row

3.4 Storage address

Building, room, shelf number(s), field location where stored/maintained.

3.5 Sowing/planting date [YYYYMMDD]

3.6 Plants/propagules establishment [%]

3.7 Type of germplasm storage

[MCPD]

If germplasm is maintained under different types of storage, multiple choices are allowed, separated by a semicolon (e.g. 20;30). [Refer to FAO Genebank Standards for Plant Genetic Resources for Food and Agriculture (2014) for details on storage type].

- 10 Seed collection
 - 11 Short term
 - 12 Medium term
 - 13 Long term
- 20 Field collection
- 30 *In vitro* collection (Slow growth)
- 40 Cryopreserved collection
- 50 DNA collection
- 99 Other (elaborate in **3.10 Remarks**)

3.8 Duplication at other location(s)

- 0 No
- 1 Yes

3.8.1 Location of safety duplicates

[MCPD]

FAO WIEWS code of the institute(s) where a safety duplicate of the accession is maintained. Multiple values are separated by a semicolon without space. It follows **1.1 Institute code**.

3.9 *In vitro* conservation**3.9.1 Type of explant**

- 1 Seed
- 2 Zygotic embryo
- 3 Apical or axillary meristem
- 4 Apical or axillary shoot tip
- 5 Somatic embryo
- 6 Callus
- 7 Cell suspension
- 99 Other (specify in descriptor **3.10 Remarks**)

3.9.2 Date of introduction *in vitro* [YYYYMMDD]

3.9.3 Type of sub-cultured material

- 1 Seed
- 2 Zygotic embryo
- 3 Apical or auxiliary meristem
- 4 Apical or auxiliary shoot tip
- 5 Somatic embryo
- 6 Callus
- 7 Cell suspension
- 99 Other (specify in descriptor 3.10 Remarks)

3.9.4 Regeneration process

- 1 Organogenesis
- 2 Somatic embryogenesis
- 99 Other (specify in descriptor 3.10 Remarks)

3.9.5 Number of genotypes introduced *in vitro***3.9.6 Number of replicates per genotype****3.9.7 Last subculture date [YYYYMMDD]****3.9.8 Medium used at the last subculture****3.9.9 Number of plants at the last subculture****3.9.10 Location after the last subculture****3.9.11 Next subculture date [YYYYMMDD]****3.10 Remarks**

Any additional information may be specified here.

4. Multiplication/regeneration descriptors**4.1 Accession number**

(Passport 1.2)

4.2 Population identification

Collecting numbers, pedigree, cultivar name, etc., depending on the population type.

4.3 Field plot number**4.4 Multiplication/regeneration site locations**

4.5 Collaborator**4.6 Regeneration year [YYYY]**

Year (estimated) when tree should be propagated for regeneration.

4.7 Propagation method

Method used to produce trees.

- 1 Seed
- 2 Budding
- 3 Grafting
- 4 Layering
- 5 Tissue culture
- 99 Other (specify in descriptor **4.12 Notes**)

4.8 Sowing/planting date [YYYYMMDD]**4.9 Cultural practices****4.9.1 Planting density**

Number of trees established per hectare.

4.9.2 Fertilizer application

Specify type, doses, frequency of each and method of application.

4.9.3 Irrigation

Specify frequency.

4.10 Previous multiplication and/or regeneration**4.10.1 Location****4.10.2 Plot number****4.10.3 Sowing/planting date [YYYYMMDD]****4.11 Number of times accession regenerated**

Since the date of acquisition.

4.12 Notes

Any additional information may be specified here.

ENVIRONMENT AND SITE

5. Characterization and/or evaluation site descriptors

5.1 Country of characterization and/or evaluation

(See instructions in descriptor 2.5 Country of origin).

5.2 Site (research institute, farm, collection point)

5.2.1 Latitude

(See format under 2.8).

5.2.2 Longitude

(See format under 2.9).

5.2.3 Elevation [m asl]

5.2.4 Name and address of farm or institute

(Or description of location if on public land/in forests).

5.2.5 Planting site in the field

Give block, strip and/or row/plot numbers as applicable, plants/plot, replication.

5.3 Evaluator's name and address

5.4 Sowing/grafting/budding/layering date [YYYYMMDD]

5.5 Evaluation environment

Environment in which characterization/evaluation was carried out.

- 1 Field
- 2 Screenhouse
- 3 Greenhouse
- 4 Laboratory
- 99 Other (specify in descriptor 5.16 Notes)

5.6 Condition of tree

Record the condition of the tree at the time of characterization/evaluation.

- | | |
|-------------------------|---------------------------|
| 1 Dying | 5 Mature – vigorous |
| 2 Old – declining | 6 Young (not yet bearing) |
| 3 Mature – diseased | 7 Seedling |
| 4 Mature – non-vigorous | |

5.7 Seed germination [%]

Specify number of days over which germination is measured.

5.8 Grafting/budding/layering success [%]

Specify number of days over which the success is recorded. Indicate the rootstock.

5.9 Number of days to planting after budding/layering [d]**5.10 Field establishment [%]**

Specify number of days over which establishment is measured.

5.11 Sowing/planting site in the field

Give block, strip and/or row/plot numbers as applicable, plants/plot, replication.

5.12 Field spacing

5.12.1 Distance between trees in a row [m]

5.12.2 Distance between rows [m]

5.13 Fertilizer

Specify types used, doses, frequency of each and method of application.

5.14 Plant protection

Specify pesticides used, doses, frequency of each and method of application.

5.15 Environmental characteristics of site

Use descriptors 6.1.1 to 6.2 in section 6.

5.16 Notes

Any other site-specific information.

6. Collecting and/or characterization/evaluation site environment descriptors

6.1 Site environment

6.1.1 Topography

This refers to the profile in elevation of the land surface on a broad scale.

(From FAO 1990).

1	Flat	0	-	0,5%
2	Almost flat	0,6	-	2,9%
3	Gently undulating	3	-	5,9%
4	Undulating	6	-	10,9%
5	Rolling	11	-	15,9%
6	Hilly	16	-	30%
7	Steeply dissected	>30%, moderate elevation range		
8	Mountainous	>30%, great elevation range (>300m)		
99	Other (elaborate in descriptor 6.2 Remarks)			

6.1.2 Higher level landform (general physiographic features)

The landform refers to the shape of the land surface in the area in which the site is located (adapted from FAO 1990).

- 1 Plain
- 2 Basin
- 3 Valley
- 4 Plateau
- 5 Upland
- 6 Hill
- 7 Mountain

6.1.3 Land element and position

Description of the geomorphology of the immediate surroundings of the site (adapted from FAO 1990). (See Fig. 1).

- | | |
|----------------------|---|
| 1 Plain level | 17 Interdunal depression |
| 2 Escarpment | 18 Mangrove |
| 3 Interfluve | 19 Upper slope |
| 4 Valley | 20 Midslope |
| 5 Valley floor | 21 Lower slope |
| 6 Channel | 22 Ridge |
| 7 Levee | 23 Beach |
| 8 Terrace | 24 Beachridge |
| 9 Floodplain | 25 Rounded summit |
| 10 Lagoon | 26 Summit |
| 11 Pan | 27 Coral atoll |
| 12 Caldera | 28 Drainage line (bottom position in flat or almost-flat terrain) |
| 13 Open depression | 29 Coral reef |
| 14 Closed depression | 30 Other (specify in appropriate section's Notes) |
| 15 Dune | |
| 16 Longitudinal dune | |

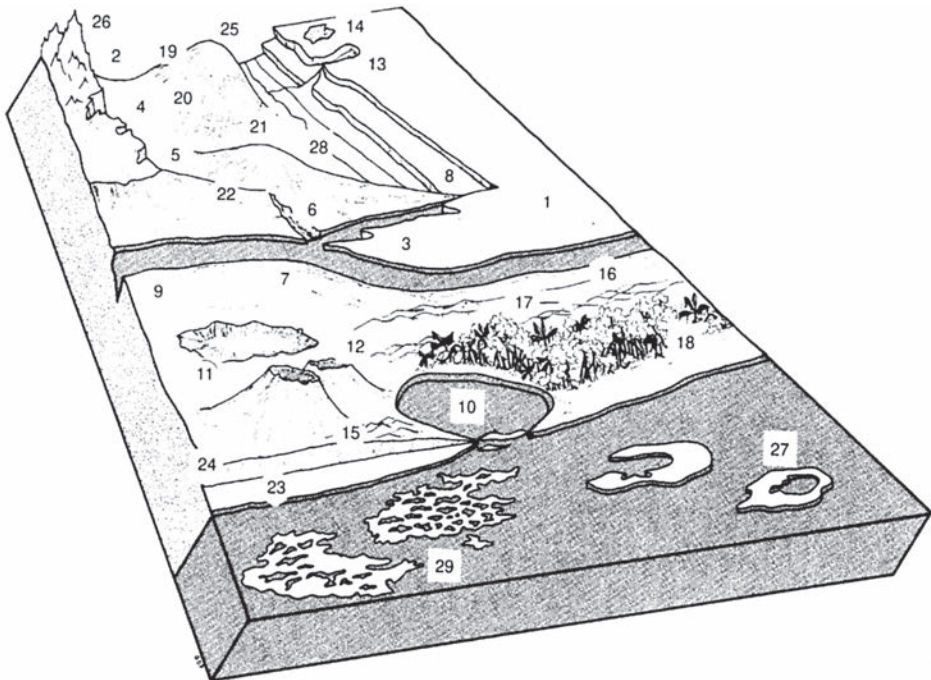


Fig. 1. Land element and position

6.1.4 Slope [°]

Estimated slope of the site.

6.1.5 Slope aspect

The direction the slope faces on which the accession was collected. Describe the direction with symbols N, S, E, W (e.g. a slope that faces a south-western direction has an aspect of SW).

6.1.6 Land use classification

(From FAO, 2006).

6.1.6.1 Crop agriculture (if present)

- 1 Annual field cropping
- 2 Perennial field cropping
- 3 Tree and shrub cropping

6.1.6.2 Mixed farming

- 1 Agroforestry plot
- 2 Homegarden
- 3 Agropastoralism/pasture

6.1.6.3 Forestry

- 1 Natural forest and woodland
- 2 Plantation forestry

6.1.6.4 Nature protection

- 1 Nature and game reserve, National Park
- 2 Degradation control planting

6.1.6.5 Human Settlement

- 1 Village
- 2 Town
- 3 Other (e.g. 'in industrial area', 'riverside', specify in appropriate descriptor **Remarks**)

6.1.7 Overall natural vegetation surrounding and at the site (if present)

(Adapted from FAO, 2006).

- 10 Herbaceous
- 11 Grassland
- 12 Forbland
- 20 Closed forest (continuous tree layer, crowns overlapping, large number of tree and shrub species in distinct layers)
- 30 Woodland (continuous tree layer, crowns usually not touching, understory may be present)
- 40 Scrubland
- 50 Dwarf shrubs
- 99 Other (specify in appropriate descriptor **Remarks**)

6.1.8 Soil drainage

(Adapted from FAO, 2006).

- 3 Poorly drained
- 5 Moderately drained
- 7 Well drained

6.1.9 Soil matrix colour

(Adapted from FAO, 2006).

The colour of the soil matrix material in the root zone around the accession is recorded in the moist condition (or both dry and moist condition, if possible) using the notation for hue, value and chroma as given in the Munsell Soil Color Charts (Munsell, 1975). If there is no dominant soil matrix colour, the horizon is described as mottled and two or more colours are given and should be registered under uniform conditions. Early morning and late evening readings are not accurate. Provide depth of measurement (cm). If colour chart is not available, the following states may be used:

- | | | |
|-----------------|--------------------|-----------------|
| 1 White | 7 Reddish brown | 13 Greyish |
| 2 Red | 8 Yellowish brown | 14 Blue |
| 3 Reddish | 9 Yellow | 15 Bluish-black |
| 4 Yellowish red | 10 Reddish yellow | 16 Black |
| 5 Brown | 11 Greenish, green | |
| 6 Brownish | 12 Grey | |

6.1.10 Soil texture classes

(Adapted from FAO, 2006). For convenience in determining the texture classes of the following list, particle size classes are given for each of the fine earth fractions listed below. (See Fig. 2.).

- 1 Clay
- 2 Loam
- 3 Clay loam
- 4 Silt
- 5 Silt clay
- 6 Silt clay loam
- 7 Silt loam
- 8 Sandy clay
- 9 Sandy clay loam
- 10 Sandy loam
- 11 Loamy sand
- 12 Sand (unspecified)

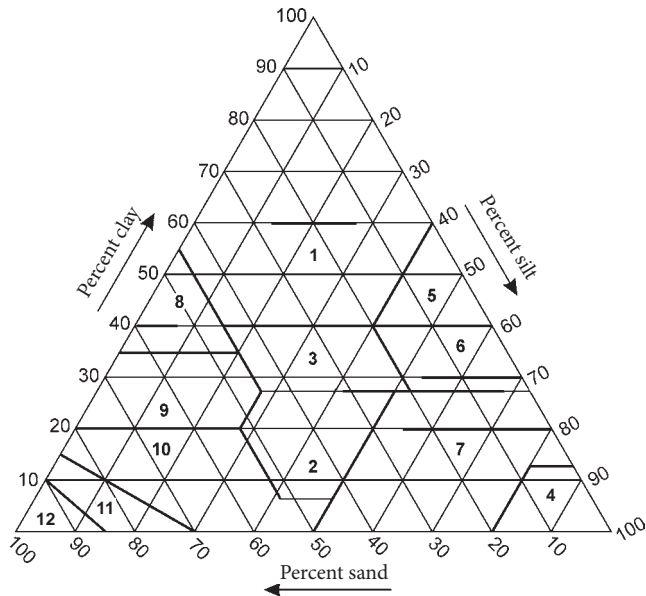


Fig. 2. Soil texture classes (adapted from FAO, 2006)

6.1.11 Soil organic matter content

- 1 Nil (as in arid zones)
- 2 Low (as in long-term cultivation in a tropical setting)
- 3 Medium (as in recently cultivated but not yet much depleted)
- 4 High (as in never cultivated, and in recently cleared forest)
- 5 Peaty

6.1.12 Water availability

- 1 Rainfed
- 2 Irrigated
- 3 Flooded
- 4 River banks
- 5 Sea coast
- 99 Other (specify in appropriate descriptor **Remarks**)

6.1.13 Soil fertility

General assessment of the soil fertility based on existing vegetation.

- 3 Low
- 5 Moderate
- 7 High

6.1.14 Climate of the site

Should be assessed as close to the site as possible.

6.1.14.1 Temperature [°C]

Provide either the monthly or the annual mean.

6.1.14.1.1 Number of recorded years**6.1.14.2 Duration of the dry season [d]****6.1.14.3 Rainfall [mm]**

Provide either the monthly or the annual mean (state number of recorded years).

6.1.14.3.1 Number of recorded years**6.2 Remarks**

Provide here any additional information related to the site (i.e. if data collected refers to collecting or to characterization/evaluation sites).

CHARACTERIZATION

7. Plant descriptors

List of minimum highly discriminating descriptors for butiá

Descriptor Number	Descriptor Name
7.2.1	Leaf growth habit (Arrangement)
7.2.2	Leaf colour
7.3.2	Colour of rachillae
7.3.4	Number of bunches
7.4.2	Fruit mature colour
7.4.3	Fruit shape
7.4.5	Fruit maximum diameter [mm]
7.4.6	Fruit length [mm]
7.4.7	Average weight of 20 mature fruits [g]
7.4.11	Fruit flavour
8.3.9	Amount of fibres in the pulp

7.1 Tree descriptors

7.1.1 Stem circumference [cm]

Measured at 1.3 m height above ground level **on adult plants**.

7.2 Leaf

*7.2.1 Leaf growth habit

Observe arrangement of leaves on adult plants. (See Fig. 3).

- 1 Erect
- 2 Intermediate
- 3 Prostrate
- 99 Other (specify in descriptor 7.6 Notes)

***7.2.2 Leaf colour**

If possible, use colour codes from the *Royal Horticultural Society*. If these are not available, use the following colour codes:

- 1 Greyish
- 2 Light Green
- 3 Dark Green
- 99 Other (specify in descriptor 7.6 Notes)



Fig. 3. Leaf growth habit

7.3 Inflorescence and flower**7.3.1 Colour of male flowers**

Observed soon after the opening of the spathe. If possible, use colour codes from the *Royal Horticultural Society*. If these are not available, use the following colour codes:

- 1 Yellow
- 2 Purple
- 3 Orange
- 4 Pink
- 99 Other (specify in descriptor 7.6 Notes)

***7.3.2 Colour of rachillae**

Observed soon after the opening of the spathe. If possible, use colour codes from the *Royal Horticultural Society*. If these are not available, use the following colour codes:

- 1 Cream
- 2 Yellow
- 3 Green
- 4 Pink
- 5 Purple
- 99 Other (specify in descriptor 7.6 Notes)

7.3.3 Bunch habit

- 1 Erect
- 3 Intermediate
- 5 Prostrate

***7.3.4 Number of bunches**

Count the number of bunches on the palm when you collect it for characterization.

7.3.5 Bunch length [cm]

Measure at least three bunches and record the average.

7.3.6 Bunch weight [g]**7.4 Fruit****7.4.1 Fruit number per bunch*****7.4.2 Fruit mature colour**

If possible, use colour codes from the *Royal Horticultural Society*. If these are not available, use the following colour codes:

- 1 Cream
- 2 Yellow
- 3 Orange
- 4 Reddish-orange
- 5 Red
- 6 Purple
- 99 Other (specify in in descriptor 7.6 Notes)

***7.4.3 Fruit shape**

Record the predominant shape using 10 fruits per tree. (See Fig. 4).

- 1 Roundish
- 2 Oblate
- 3 Ovoid
- 4 Oblong
- 99 Other (specify in descriptor 7.6 Notes)



Fig. 4. Fruit shape

7.4.5 Fruit maximum diameter [mm]**7.4.6 Fruit length [mm]**

Measured from the base to the tip of the fruit.

7.4.7 Average weight of 20 mature fruits [g]*7.4.8 Average fruit weight [g FW]**

- 1 Less than 8 g
- 2 From 8.1 g to 15.9 g
- 3 More than 16 g

7.4.9 Average weight of fruit endocarp [g]**7.4.10 Fruit diaspore diameter*****7.4.11 Fruit flavour**

- 1 Sweet
- 2 Sour
- 3 Pungent
- 99 Other (specify in descriptor 7.6 Notes)

7.5 Seed traits

7.5.1 Average weight of 20 seeds [g]

Cut the fruits, extract the seeds, remove large pieces of adhered pulp, and weigh the seeds.

7.6 Notes

Specify any additional information here.

EVALUATION

8. Tree descriptors

8.1 Flowering season

8.1.1 Start of the flowering period [YYYYMMDD]

8.1.2 End of the flowering period [YYYYMMDD]

8.2 Fruit ripening period

8.2.1 Start of fruit ripening [YYYYMMDD]

8.2.2 End of fruit ripening [YYYYMMDD]

8.3 Pulp nutrient content

Edible portion of raw pulp from mature fruits.

8.3.1 Pulp protein content [g/100g FW]

8.3.2 Pulp calcium content [mg/100g FW]

8.3.3 Pulp potassium content [mg/100g FW]

8.3.4 Pulp ascorbic acid content [mg/100g FW]

8.3.5 Pulp magnesium content [mg/100g FW]

8.3.6 Pulp iron content [mg/100g FW]

8.3.7 Pulp zinc content [mg/100g FW]

8.3.8 Pulp β carotene content [mg/100g FW]

*8.3.9 Amount of fibres in the pulp

- 1 Few
- 2 Intermediate
- 3 Many

8.4 Notes

Specify any additional information here.

9. Abiotic stress susceptibility

Scored under artificial and/or natural conditions, which should be clearly specified. These are coded on a susceptibility scale from 1 to 9, viz.:

- 1 Very low or no visible sign of susceptibility
- 3 Low
- 5 Intermediate
- 7 High
- 9 Very high

9.1 Reaction to shading

9.2 Reaction to frost

9.3 Reaction to drought

9.4 Reaction to low temperatures

9.5 Remarks

Specify any additional information here (i.e. elevation, absence of direct sunlight, lightning storm, very dry soil, etc.).

10. Biotic stress susceptibility

In each case, it is important to state the origin of the infestation or infection, i.e. natural, field inoculation, laboratory. Record such information in descriptor **10.3 Remarks**. These are coded on a susceptibility scale from 1 to 9, viz:

- 1 Very low or no visible signs of susceptibility
- 3 Low
- 5 Intermediate
- 7 High
- 9 Very high

	Causal Organism	Common name
10.1	<i>Pachymerus nucleorum</i>	Bicho-de-coco, Coró-do-butiá, Bicho-do-butiá
10.2	<i>Schistocerca cancellata</i>	Gafanhoto/Saltamontes

10.3 Remarks

Specify any additional information here.

11. Biochemical markers

Specify methods used and cite reference(s). Refer to *Descriptors for genetic marker technologies*, available in PDF format from Bioversity International web site (<http://www.bioversityinternational.org/>) or by email request to bioversityinternational-publications@cgiar.org.

12. Molecular markers

Refer to *Descriptors for genetic marker technologies*, available in PDF format from Bioversity International web site (<http://www.bioversityinternational.org/>) or by email request to bioversityinternational-publications@cgiar.org.

13. Cytological characters**13.1 Chromosome number****13.2 Ploidy level****13.3 Other cytological characters****14. Identified genes**

Describe any known specific mutant present in the accession.

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Annex I. COLLECTING FORM for butiá

SAMPLE IDENTIFICATION

COLLECTING INSTITUTE CODE (2.1):

COLLECTING NUMBER (2.2):

PHOTOGRAPH No. (2.25):

HERBARIUM SPECIMEN (2.26):

COLLECTING DATE OF SAMPLE [YYYYMMDD] (2.3):

GENUS (1.6):

SPECIES (1.7):

SUBTAXON (1.8):

COMMON TREE/CROP NAME (1.10.3):

COLLECTING SITE LOCATION

COUNTRY OF ORIGIN (2.5):

LOCATION (2.7):

km:

direction:

from:

LATITUDE (2.8):

LONGITUDE (2.9):

ELEVATION (2.13):

m asl

Additional notes:

COLLECTING SITE ENVIRONMENT

COLLECTING/ACQUISITION SOURCE (2.14):

10. Wild habitat

20. Farm or cultivated habitat

30. Market or shop

40. Institute, Experimental station,
Research Org., Genebank

50. Seed company

60. Weedy, disturbed or ruderal habitat

99. Other (specify):

HIGHER LEVEL LANDFORM (6.1.2):

1. Plain

2. Basin

3. Valley

4. Plateau

5. Upland

6. Hill

7. Mountain

SLOPE [°] (6.1.4):

SLOPE ASPECT (6.1.5):

(code N,S,E,W)

OVERALL NATURAL VEGETATION SURROUNDING AND AT THE SITE (IF PRESENT) (6.1.7):

11. Grassland

12. Forbland

20. Closed forest

30. Woodland

40. Scrubland

50. Dwarf shrubs

99. Other (specify):

SOIL DRAINAGE (6.1.8):

3. Poorly drained

5. Moderately drained

7. Well drained

SAMPLE

BIOLOGICAL STATUS OF ACCESSION (2.15):

100. Wild

200. Weedy

300. Traditional cultivar/landrace

400. Breeding/research material

500. Advanced/improved cultivar (conventional
breeding)

600. GMO (by genetic engineering)

999. Other (specify):

TYPE OF SAMPLE COLLECTED (2.17):

1. Vegetative

2. Seed

3. Pollen

4. *In vitro* culture

99. Other (specify):

No. PLANTS SAMPLED (2.18):

No. SEEDS COLLECTED (2.19):

GENERAL APPEARANCE OF POPULATION (2.20):

3. Poor

5. Medium

7. Good

POPULATION ISOLATION (2.21)

[km]

PREVAILING STRESSES (2.24.13):

Information on main associated biotic (pests and diseases) and abiotic (drought, salinity, temperature) stresses

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LOCAL/VERNACULAR NAME (2.24.2):

ETHNIC GROUP (2.24.1):

HISTORY OF PLANT USE (2.24.3):

1. Ancestral/indigenous (always associated with the place and community)

2. Introduced (but in unknown distant past) 3. Introduced (time of introduction known)

PARTS OF THE PLANT USED (2.24.6):

1. Fruit

2. Leaf

3. Tree

4. Flower

5. Crown full set of leaves

6. Stem/trunk

7. Seed

99. Other (specify):

PLANT USE (2.24.10):

1. Home consumption

2. For direct sale

3. For sale through intermediary etc.

4. Exchange, neighbour, friends, family

5. Nutraceutical use

6. Handicrafts

7. Ornamental

8. Industrial

99. Other (specify):

CULTURAL CHARACTERISTICS (2.24.12): Mention if there is any folklore (i.e., taboos, stories and/or superstitions)

0. No

1. Yes: specify in REMARKS (2.27)

Start of the flowering period [YYYYMMDD] (8.1.1):

End of the flowering period [YYYYMMDD] (8.1.2):

Start of fruit ripening [YYYYMMDD] (8.2.1):

End of fruit ripening [YYYYMMDD] (8.2.2):

MODE OF REPRODUCTION (2.24.14):

1. Vegetative

2. Seed

3. Both

SEASONALITY (2.24.16):

1. Available only in season/at particular period

2. Available throughout the year

ASSOCIATED FLORA (2.24.15):

Other dominant crop/or wild plant species, including other *Butia* species, found in and around the collecting site

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REMARKS (2.27):

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