Descriptors for
Coffee
(*Coffea* spp. and *Psilanthus* spp.)
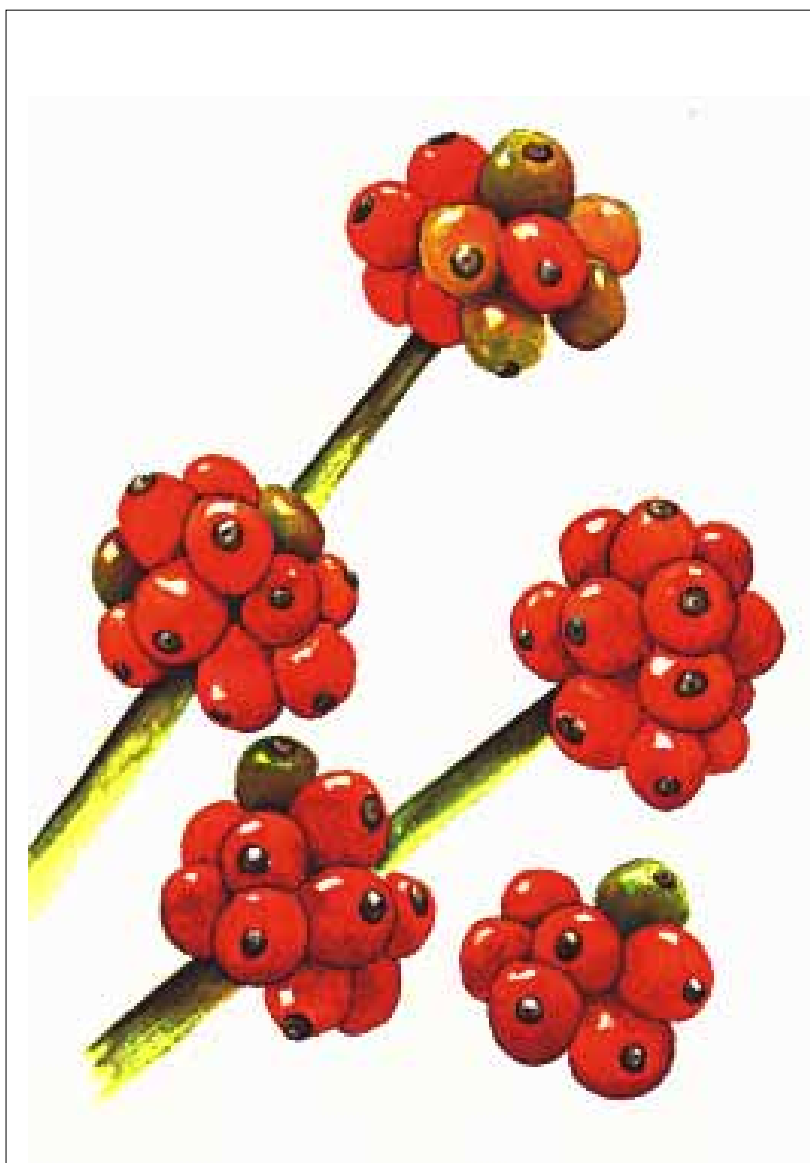

IPGRI
International Plant Genetic Resources Institute

2   Descriptors for Coffee

DEFINITIONS AND USE OF THE DESCRIPTORS

IPGRI now uses the following definitions in genetic resources documentation:

Passport descriptors: These provide the basic information used for the general management of the accession (including the 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: Many of the descriptors in this category are susceptible to environmental differences but are generally useful in crop improvement and others may involve complex biochemical or molecular characterization. They include yield, agronomic performance, stress susceptibilities and biochemical and cytological traits.

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.

Minimum highly discriminating descriptors are marked with a star (★).

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

(a) the Système International d'Unités (SI system) is used. The units to be applied are given in square brackets following the descriptor name;

(b) 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);

(c) many quantitative characters which are continuously variable are recorded 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 9 (Biotic stress susceptibility), 1 = very low susceptibility and 9 = very high susceptibility;

(d) when a descriptor is scored using a 1-9 scale, such as in (c), '0' would be scored when (i) the character is not expressed; (ii) when a descriptor is inapplicable. In the following example, '0' will be recorded if an accession does not have a central leaf lobe:

Shape of central leaf lobe
   3   Toothed
   5   Elliptic
   7   Linear

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

Absence/presence of terminal leaflet
   0   Absent
   1 (or +) Present

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

(g) 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 R.S. Rana *et al.* (1991), or van Hintum (1993), that clearly state a method for scoring heterogeneous accessions;

(h) dates should be expressed numerically in the format DDMMYYYY, where

   DD   - 2 digits to represent the day
   MM   - 2 digits to represent the month
   YYYY - 4 digits to represent the year.

PASSPORT

1. Accession descriptors

★ **1.1**   **Accession number**   (2.1)
This number serves as a unique identifier for accessions and is assigned when an accession is entered into the collection. Once assigned this number should never be reassigned to another accession in the collection. Even if an accession is lost, its assigned number is still not available for re-use. Letters should be used before the number to identify the genebank or national system (e.g. IDG indicates an accession that comes from the genebank at Bari, Italy; CGN indicates an accession from the genebank at Wageningen, The Netherlands; PI indicates an accession within the USA system).

1.2   **Donor name**
Name of institution or individual responsible for donating the germplasm

1.3   **Donor number**
Number assigned to an accession by the donor

★ **1.4**   **Other number(s) associated with the accession**
Any other identification number known to exist in other collections for this accession, e.g. USDA Plant Inventory number (not **Collecting number**, see **2.3**). Other numbers can be added as 1.4.3, etc.
        1.4.1   **Other number 1**
        1.4.2   **Other number 2**

★ **1.5**   **Scientific name**
        1.5.1   **Genus**
        1.5.2   **Species**
        1.5.3   **Subspecies**
        1.5.4   **Botanical variety**

1.6   **Pedigree**
Parentage or nomenclature, and designations assigned to breeders' material

1.7   **Cultivar name**
        1.7.1   **Cultivar name**
        Either a registered or other formal cultivar designation given to the accession

        1.7.2   **Translation/Transliteration**
        Provide translation of the local cultivar name into English

1.7.3   Synonyms
Include here any previous identification other than the current name. Collecting number or newly assigned station name are frequently used as identifiers.

1.8   Acquisition date [DDMMYYYY]   (2.2)
Date on which the accession entered the collection

1.9   Type of material received
    1   Plant (including seedling)
    2   Fruit/berry
    3   Shoot/bud
    4   Pollen
    5   Other (specify in descriptor **1.11 Notes**)

1.10   Accession size
Approximate number of seed progeny of an accession introduced into the genebank

1.11   Notes
Any additional information may be specified here

2. Collecting descriptors

★ **2.1   Collecting institute(s)**
Institute(s) and people collecting/sponsoring the sample collection

2.2   Site number
Number assigned to the physical site by the collector

2.3   Collecting number   (1.1)
Original number assigned by the collector(s) of the sample, normally composed of the name or initials of the collector(s) followed by a number. This item is essential for identifying duplicates held in different collections. It should be unique and always accompany subsamples wherever they are sent.

2.4   Collecting date of original sample [DDMMYYYY]   (1.3)

2.5   Country of collecting   (1.4)
Name of the country in which the sample was collected or bred. Use the three-letter abbreviations from the *International Standard (ISO) Codes for the representation of names of countries*, No. 3166, 4th Edition. Copies of these are available from DIN: Deutsche Institut für Normung e.V., 10772 Berlin, Germany; Tel. 30-2601-2860; Fax 30-2601-1231, Tlx. 184 273-din-d.

2.6   Province/State   (1.5)

Name of the primary administrative subdivision of the country in which the sample was collected

2.7   Department/County

Name of the secondary administrative subdivision (within a Province/State) of the country in which the sample was collected

2.8   Location of collecting site

Distance in kilometers and direction from the nearest town, village or map grid reference point (e.g. CURITIBA 7S means 7 km south of Curitiba)

2.9   Latitude of collecting site   (1.8)

Degrees and minutes followed by N (North) or S (South) (e.g. 1030S)

2.10   Longitude of collecting site   (1.9)

Degrees and minutes followed by E (East) or W (West) (e.g. 07625W)

★ **2.11   Elevation of collecting site** [m asl]   (1.7)

2.12   Collecting source   (1.6)
    1.   Wild habitat
        1.1   Forest/woodland
        1.2   Shrubland
        1.3   Grasslands
        1.4   Desert/tundra
    2.   Farm
        2.1   field
        2.2   orchard
        2.3   garden
        2.4   fallow
        2.5   pasture
        2.6   store
    3.   Market
        3.1   Town
        3.2   Village
        3.3   Urban
        3.4   Other exchange system
    4.   Institute/Research organization
    5.   Other (specify in descriptor **2.30 Collector's notes**)

2.13   Collecting source environment

Use descriptors **5.1.1 to 5.1.22** in section 5

2.14   Status of sample
- 1   Wild
- 2   Weedy
- 3   Primitive cultivar/Landrace
- 4   Breeders line
- 5   Advanced cultivar
- 6   Unknown
- 7   Other (e.g. 'semi-wild', 'subspontaneous', specify in descriptor **2.30 Collector's notes**)

2.15   Type of sample
Form of sample collected. If different types of material were collected from the same source, each sample type should be designated with a unique collecting number and a corresponding unique accession number.
- 1   Zygotic embryo
- 2   Seed
- 3   Vegetative
- 4   Pollen
- 5   Tissue culture (specify which part of the plant is used in descriptor **2.30 Collector's notes**)

2.16   Population size
Number of genotypes sampled. If estimated, provide method used: (i) row per column count; (ii) area per plant density; for both, allow for missing stands

2.17   Population isolation [km]
Straight line distance between two adjacent collecting sites

2.18   Number of clonal material (stem cuttings) collected [number]

2.19   Type of stem cuttings collected
- 1   Terminal shoots
- 2   Lateral shoots
- 3   Runners
- 4   Hanging shoots

2.20   Cropping system
- 1   Monoculture
- 2   Mixed (with food crops)
- 3   Ancillary crops with timber
- 4   Other (specify crop in descriptor **2.30 Collector's notes**)

2.21   Associated flora
Other dominant crop/plant species, found in and around the collecting site

2.22   Cultural practices
    2.22.1   Planting date [DDMMYYYY]
    2.22.2   First harvest date [DDMMYYYY]
    2.22.3   Irrigation
    Specify amount, frequency and method of application
    2.22.4   Other
    Specify in descriptor **2.30 Collector's notes**

★ **2.23   Local/vernacular name**   (1.2)
Name given by farmer to crop and cultivar/landrace/weed. State language and dialect if
the ethnic group is not provided

2.24   Ethnic group
Name of the tribe of the farmer donating the sample or of the people living in the area of
collecting

2.25   Uses of the accession
    1   Beverage
    2   Medicinal
    3   Other (specify in descriptor **2.30 Collector's notes**)

2.26   Photograph
Was a photograph(s) taken of the accession or habitat at the time of collecting? If so, provide
an identification number(s) in descriptor **2.30 Collector's notes**.
    0   No
    1   Yes

2.27   Herbarium specimen
Was a herbarium specimen collected? If so, provide an identification number and indicate
in which place (herbarium) the coffee specimen was deposited, in descriptor **2.30 Collector's
notes**.
    0   No
    1   Yes

2.28   Prevailing stresses
Information on associated biotic and abiotic stresses. Indicate if disease indexing was done
at the time of collecting in descriptor **2.30 Collector's notes**.

2.29   Genetic erosion

Estimate of the rate at which genetic erosion of the species is occurring in the region of collecting

      3   Slow
      5   Intermediate
      7   Rapid

2.30   Collector's notes

Additional information recorded by the collector or any specific information on any state in any of the above descriptors

MANAGEMENT

3. Plant management descriptors

3.1   Accession number   (Passport 1.1)

3.2   Field preservation

3.2.1   Field location

3.2.2   Planting date [DDMMYYYY]

3.2.3   Root system
(Differs if it is seedling, cutting or grafting)

3.2.4   Field duplicates
For each duplicate indicate field location, planting date and root system
3.2.4.1   Field location
3.2.4.2   Planting date [DDMMYYYY]
3.2.4.3   Root system

3.3   *In vitro* preservation

3.3.1   Type of explant
1   Apical or axillary meristem
2   Nodal cutting
3   Zygotic embryo
4   Seed
5   Leaf
6   Other (specify in descriptor **3.5 Notes**)

3.3.2   Introduction date   [DDMMYYYY]

3.3.3   Type of subcultured material
1   Axillary shoot
2   Callus
3   Cell suspension
4   Other (specify in descriptor **3.5 Notes**)

3.3.4   Regeneration process
1   Organogenesis
2   Somatic embryogenesis
3   Other (specify in descriptor **3.5 Notes**)

3.3.5   Number of plants at the establishment
(Number of replicates)

3.3.6   Last subculture date [DDMMYYYY]
3.3.7   Medium used at the last subculture
3.3.8   Number of plants at the last subculture
3.3.9   Location after the last subculture

3.4   Cryopreservation

3.4.1   Type of material for cryopreservation
     1   Seed
     2   Zygotic embryo
     3   Apex
     4   Somatic embryo
     5   Callus
     6   Cell suspension
     7   Other (specify in descriptor **3.5 Notes**)

3.4.2   Introduction date in liquid nitrogen [DDMMYYYY]
3.4.3   Number of plants introduced in liquid nitrogen
3.4.4   End of storage period [DDMMYYYY]
3.4.5   Number of plants taken from liquid nitrogen
3.4.6   Type of subcultured material for recovery
(After liquid nitrogen)
     1   Axillary shoot
     2   Callus
     3   Cell suspension
     4   Other (specify in descriptor **3.5 Notes**)

3.4.7   Regeneration process
     1   Organogenesis
     2   Somatic embryogenesis
     3   Other (specify in descriptor **3.5 Notes**)

3.4.8   Number of recovery samples
3.4.9   Location after the last subculture

3.5   Notes
Any additional information may be specified here

ENVIRONMENT AND SITE

4. Characterization and/or evaluation site descriptors

4.1   Country of characterization and/or evaluation
(See instructions in **2.5 Country of collecting**)

4.2   Site (research institute)
4.2.1   Latitude
Degrees and minutes followed by N (North) or S (South) (e.g. 1030S)

4.2.2   Longitude
Degrees and minutes followed by E (East) or W (West) (e.g. 07625 W)

4.2.3   Elevation [m asl]

4.2.4   Name of farm or institute

4.3   Evaluator's name and address

4.4   Planting or last stumping date [DDMMYYYY]

4.5   First harvest date [DDMMYYYY]

4.6   Last harvest date [DDMMYYYY]

4.7   Evaluation environment
Environment in which characterization/evaluation was carried out
        1   Field
        2   Screenhouse
        3   Glasshouse/plastic house
        4   Laboratory
        5   Other (specify in descriptor **4.15 Notes**)

4.8   Number of plants established [/ha]

4.9   Planting site in field
Give block, strip and/or row/plot numbers as applicable, plants/plot, replication

4.10   Field spacing
4.10.1   Distance between plants in a row [m]
4.10.2   Distance between rows [m]

4.11　　Environmental characteristics of site
Use descriptors **5.1.1 to 5.1.22** in section 5

4.12　　Fertilizer
Specify types, doses, frequency of each and method of application

4.13　　Irrigation
Specify method and frequencies

4.14　　Plant protection
Specify pesticides, nematicides and fungicides used, doses, frequency of each and method of application

4.15　　Notes
Any other site-specific information

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

5.1　　Site environment

★　　5.1.1　　**Topography**
This refers to the profile in elevation of the land surface on a broad scale.
The reference is 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 (>300 m)
9	Other	(specify in appropriate section's **Notes**)

★　　5.1.2　　**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

5.1.3   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	15	Dune
2	Escarpment	16	Longitudinal dune
3	Interfluve	17	Interdunal depression
4	Valley	18	Mangrove
5	Valley floor	19	Upper slope
6	Channel	20	Midslope
7	Levee	21	Lower slope
8	Terrace	22	Ridge
9	Floodplain	23	Beach
10	Lagoon	24	Beachridge
11	Pan	25	Rounded summit
12	Caldera	26	Summit
13	Open depression	27	Coral atoll
14	Closed depression	28	Drainage line (bottom position in flat or almost-flat terrain)
		29	Coral reef
		30	Other (specify in appropriate section's **Notes**)
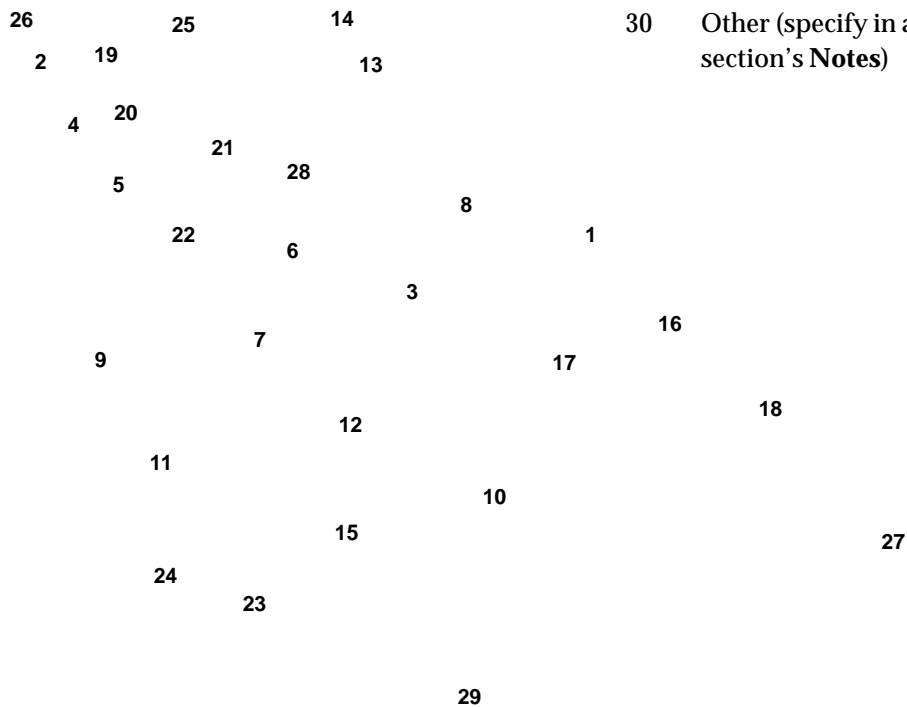
Fig. 1 Land element and position

★   **5.1.4   Slope** [°]
Estimated slope of the site

★   **5.1.5   Slope aspect**
The direction that the slope on which the accession was collected faces. Describe the direction with symbols N, S, E, W (e.g. a slope that faces a southwestern direction has an aspect of SW)

5.1.6   Crop agriculture
(From FAO 1990)
        1   Annual field cropping
        2   Perennial field cropping

5.1.7   Overall vegetation surrounding and at the site
(From FAO 1990)
        1   Grassland   (Grasses, subordinate forbs, no woody species)
        2   Forbland   (Herbaceous plants predominant)
        3   Forest   (Continuous tree layer, crowns overlapping, large number of tree and shrub species in distinct layers)
        4   Woodland   (Continuous tree layer, crowns usually not touching, understorey may be present)
        5   Shrubland   (Continuous layer of shrubs, crowns touching)
        6   Savanna   (Grasses with a discontinuous layer of trees or shrubs)
        7   Other   (specify in appropriate section's **Notes**)

5.1.8   Soil parent material
(Adapted from FAO 1990)
Two lists of examples of parent material and rock are given below. The reliability of the geological information and the knowledge of the local lithology will determine whether a general or a specific definition of the parent material can be given. Saprolite is used if the *in situ* weathered material is thoroughly decomposed, clay-rich but still showing rock structure. Alluvial deposits and colluvium derived from a single rock type may be further specified by that rock type.

        5.1.8.1   Unconsolidated material
        1   Aeolian deposits   9   Unconsolidated
             (unspecified)   (unspecified)
        2   Aeolian sand   10   Volcanic ash
        3   Littoral deposits   11   Loess
        4   Lagoonal deposits   12   Pyroclastic deposits
        5   Marine deposits   13   Glacial deposits
        6   Lacustrine deposits   14   Organic deposits
        7   Fluvial deposits   15   Colluvial deposits
        8   Alluvial deposits   16   *In situ* weathered

17 Saprolite
18 Other (specify in
    appropriate section's **Notes**)

5.1.8.2   Rock type

1	Acid igneous/ metamorphic rock	16	Limestone
		17	Dolomite
2	Granite	18	Sandstone
3	Gneiss	19	Quartzitic sandstone
4	Granite/gneiss	20	Shale
5	Quartzite	21	Marl
6	Schist	22	Travertine
7	Andesite	23	Conglomerate
8	Diorite	24	Siltstone
9	Basic igneous/ metamorphic rock	25	Tuff
		26	Pyroclastic rock
10	Ultra basic rock	27	Evaporite
11	Gabbro	28	Gypsum rock
12	Basalt	29	Other (specify in appropriate section's **Notes**)
13	Dolerite		
14	Volcanic rock		
15	Sedimentary rock	30	Not known

5.1.9   Stoniness/rockiness/hardpan/cementation
1 Tillage unaffected
2 Tillage affected
3 Tillage difficult
4 Tillage impossible
5 Essentially paved

★ **5.1.10   Soil drainage**
(Adapted from FAO 1990)
3 Poorly drained
5 Moderately drained
7 Well drained

★ **5.1.11   Soil salinity**
1 <160 ppm dissolved salts
2 160 - 240 ppm
3 241 - 480 ppm
4 >480 ppm

5.1.12   Soil depth to groundwater table
(Adapted from FAO 1990)

The depth to the groundwater table, if present, as well as an estimate of the approximate annual fluctuation, should be given. The maximum rise of the groundwater table can be inferred approximately from changes in profile colour in many, but not all, soils.

    1   0   - 25 cm
    2   25.1 - 50 cm
    3   50.1 - 100 cm
    4   100.1 - 150 cm
    5   >150 cm

5.1.13   Soil matrix colour
(Adapted from FAO 1990)

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 1977). 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		

★   ### 5.1.14   Soil pH
Actual value of the soil within the following root depths around the accession

    5.1.14.1   pH at 10-15 cm
    5.1.14.2   pH at 16-30 cm
    5.1.14.3   pH at 31-60 cm
    5.1.14.4   pH at 61-90 cm

★   ### 5.1.15   Soil erosion
    3   Low
    5   Intermediate
    7   High

5.1.16   Rock fragments
(Adapted from FAO 1990)

Large rock and mineral fragments (>2 mm) are described according to abundance

1	0 - 2%	4	15.1 - 40%
2	2.1 - 5%	5	40.1 - 80%
3	5.1 - 15%	6	>80%

★ ### 5.1.17   Soil texture classes
(Adapted from FAO 1990)

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

1	Clay	12	Coarse sandy loam
2	Loam	13	Loamy sand
3	Clay loam	14	Loamy very fine sand
4	Silt	15	Loamy fine sand
5	Silty clay	16	Loamy coarse sand
6	Silty clay loam	17	Very fine sand
7	Silt loam	18	Fine sand
8	Sandy clay	19	Medium sand
9	Sandy clay loam	20	Coarse sand
10	Sandy loam	21	Sand, unsorted
11	Fine sandy loam	22	Sand, unspecified
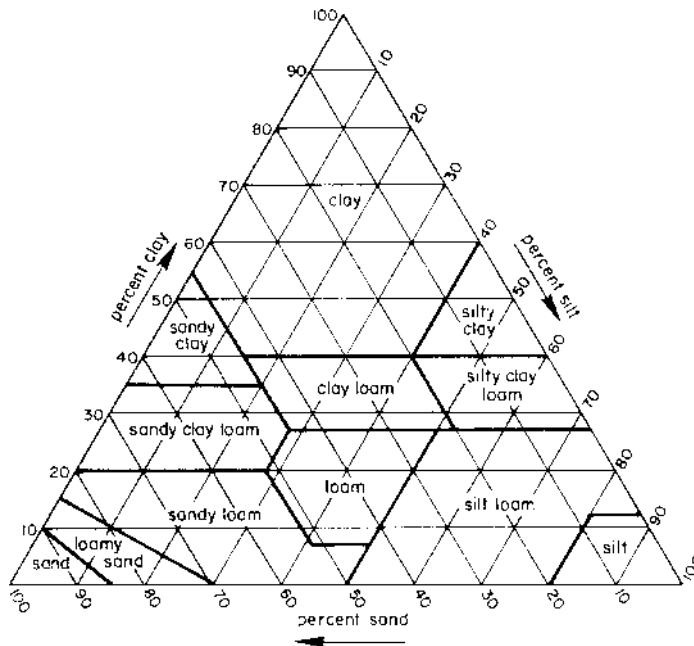
Fig. 2 Soil texture classes

★   **5.1.17.1   Soil particle size classes**
(Adapted from FAO 1990)

1	Clay	< 2 μm
2	Fine silt	2 - 20 μm
3	Coarse silt	21 - 63 μm
4	Very fine sand	64 - 125 μm
5	Fine sand	126 - 200 μm
6	Medium sand	201 - 630 μm
7	Coarse sand	631 - 1250 μm
8	Very coarse sand	1251 - 2000 μm

★   **5.1.18   Soil taxonomic classification**
As detailed a classification as possible should be given. This may be taken from a soil survey map. State class (e.g. Alfisols, Spodosols, Vertisols, etc.).

★   **5.1.19   Water availability**
1   Rainfed
2   Irrigated
3   Flooded
4   River banks
5   Sea coast
6   Other (specify in appropriate section's **Notes**)

5.1.20   Soil fertility
General assessment of the soil fertility based on existing vegetation
3   Low
5   Moderate
7   High

5.1.21   Climate of the site
Should be assessed as close to the site as possible

★   **5.1.21.1   Temperature** [^{0}C]
Provide either the diurnal (mean, maximum, minimum) or the seasonal (mean, maximum, minimum)

★   **5.1.21.2   Rainfall** [mm]
Annual average (state number of recorded years)

5.1.21.3   Wind [km/s]
Annual average (state number of years recorded)
	5.1.21.3.1	Frequency of typhoons or hurricane force winds
	5.1.21.3.2	Date of most recent typhoons or hurricane force winds [DDMMYYYY]
	5.1.21.3.3	Annual maximum wind velocity [km/s]

5.1.21.4   Frost
	5.1.21.4.1	Date of most recent frost [DDMMYYYY]
	5.1.21.4.2	Lowest temperature [ºC]

Specify seasonal average and minimum survived
	5.1.21.4.3	Duration of temperature below freezing [d]

5.1.21.5   Relative humidity
	5.1.21.5.1	Relative humidity diurnal range [%]
	5.1.21.5.2	Relative humidity seasonal range [%]

5.1.21.6   Light
3	Shady
7	Sunny

5.1.22   Other
Any additional information may be specified here

CHARACTERIZATION

6. Plant descriptors

6.1 Vegetative

★ **6.1.1 Plant habit**
1 Bush (<5 m - without distinct trunk)
2 Shrub or small tree (<5 m - one or more trunks)
3 Tree (>5 m - single trunk)

6.1.2 Plant height
Visual estimation

		Reference variety	
1	Very short	San Ramón	(SR SR)
3	Short	Caturra	(Ct Ct)
7	Tall	Típica	(TT NaNa)
9	Very tall	Maragogype	(Mg Mg)

6.1.3 Overall appearance
Specify age of plant
1 Elongated conical
2 Pyramidal
3 Bushy

★ **6.1.4 Vegetative development**
1 Monopodial
2 Sympodial

6.1.5 Branch-ramification number
Average of ramifications scored on five well-developed branches

★ **6.1.6 Branching habit**
1 Very few branches (primary)
2 Many branches (primary) with few secondary branches
3 Many branches (primary) with many secondary branches
4 Many branches (primary) with many secondary and tertiary branches

6.1.7 Angle of insertion of primary branches (3.1)
(On the main stem)
1 Drooping
2 Horizontal or spreading
3 Semi-erect

★   **6.1.8   Stipule shape**
(See Fig. 3)
      1   Round
      2   Ovate
      3   Triangular
      4   Deltate (equilaterally triangular)
      5   Trapeziform
      6   Other (specify in descriptor **6.5 Notes**)

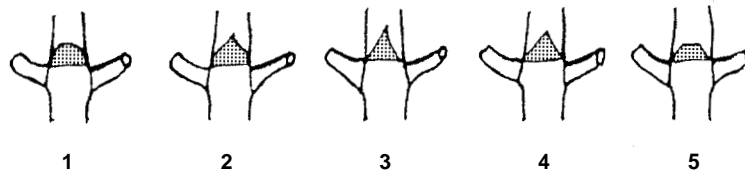**Fig. 3 Stipule shape**

★   **6.1.9   Stipule arista length** [mm]
Average of five well-developed stipule arista

6.1.10   Young leaf colour   (3.5)
      1   Greenish
      2   Green
      3   Brownish
      4   Reddish brown
      5   Bronze
      6   Other (specify in descriptor **6.5 Notes**)

★   **6.1.11**   **Leaf shape**   (3.4)
(See Fig. 4)
  1   Obovate
  2   Ovate
  3   Elliptic
  4   Lanceolate
  5   Other (specify in descriptor **6.5 Notes**)
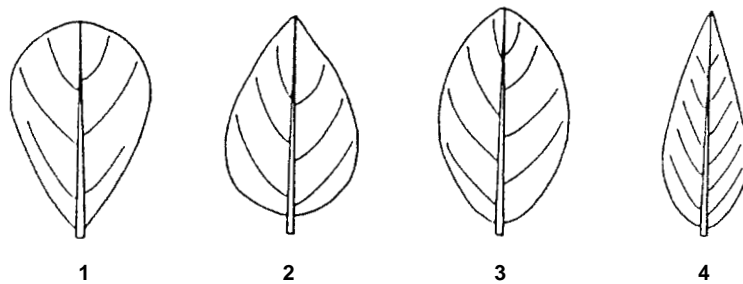

Fig. 4 Leaf shape

★   **6.1.12**   **Leaf apex shape**
(See Fig. 5)
  1   Round
  2   Obtuse
  3   Acute
  4   Acuminate
  5   Apiculate
  6   Spatulate
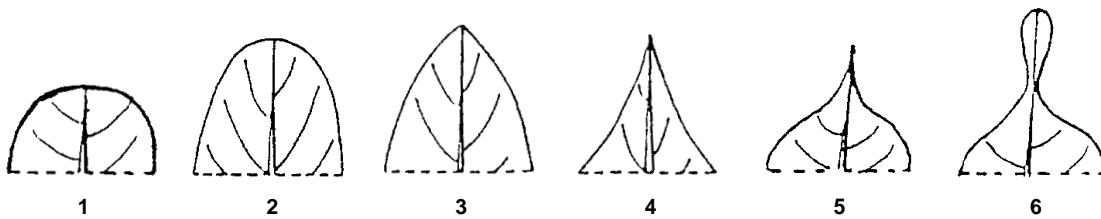 7   Other (specify in descriptor **6.5 Notes**)

Fig. 5 Leaf apex shape

★   **6.1.13**   **Leaf length** [mm]
Average of five mature (> node 3 from the terminal bud) leaves, measured from petiole end to apex

★ **6.1.14   Leaf width** [mm]
Average of five mature (> node 3 from the terminal bud) leaves, measured at the widest part

★ **6.1.15   Leaf petiole length** [mm]
Average of five one-year leaves, measured from the base to the insertion with the blade

6.1.16   Leaf petiole colour
    1   Green
    2   Dark brown
    3   Other (specify in descriptor **6.5 Notes**)

6.1.17   Young shoot colour
    1   Green
    2   Dark brown
    3   Other (specify in descriptor **6.5 Notes**)

6.1.18   Mature leaf colour
6.1.19   Venation pattern
6.1.20   Bud wax colour
6.1.21   Bud wax thickness
    3   Thin
    7   Thick

★ **6.1.22   Domatia pilosity**
Observed with portable lens or binocular lens
    3   Sparse
    5   Intermediate
    7   Dense

6.1.23   Shape of the domatia
6.1.24   Shape of the aperture
6.1.25   Position of the domatia
    1   Axillary
    2   Extra-axillary

6.2   Inflorescence and flowering
★ **6.2.1   Number of days from rainfall to flowering** [d]
★ **6.2.2   Inflorescence position**
    1   Axillary
    2   Terminal

6.2.3   Inflorescence on old wood
        0   Absent
        1   Present

★   **6.2.4   Number of flowers per axil**
Average of 10 axils, randomly selected from different nodes

★   **6.2.5   Number of flowers per fascicle**
Average of 10 fascicles, randomly selected from different nodes

★   **6.2.6   Number of fascicles per node**
Average of 10 nodes, randomly selected from different branches

★   **6.2.7   Inflorescence stalk length** [mm]
Average of five inflorescences, randomly selected from different nodes

★   **6.2.8   Corolla tube length** [mm]
Average of five flowers, randomly selected from different nodes

★   **6.2.9   Number of petals per flower**
Average of 10 flowers, randomly selected from different nodes

★   **6.2.10   Anther insertion**
        1   Excluded
        2   Included

6.2.11   Number of stamens per flower
Average of 10 flowers, randomly selected from different nodes

6.3   Fruit
For recording fruit descriptors, five observations should be made

6.3.1   Fructification duration [d]   (3.22)
Number of days between bloom and first harvest. Record the bloom date because, in certain conditions, fructification duration depends on bloom period

★   **6.3.2   Fruit colour**   (3.11)
Observed on mature fruits
        1   Yellow   7   Purple
        2   Yellow-orange   8   Purple-violet
        3   Orange   9   Violet
        4   Orange-red   10   Black
        5   Red   11   Other (specify in
        6   Red-purple   descriptor **6.5 Notes**)

★   **6.3.3**   **Fruit shape**   (3.8)
Average of five normal (not caracoli) mature fruits. (See Fig. 6)
         1   Roundish
         2   Obovate
         3   Ovate
         4   Elliptic
         5   Oblong
         6   Other (specify in descriptor **6.5 Notes**)

Fig. 6 Fruit shape

★   **6.3.4**   **Absence/presence of fruit ribs**
         0   Absent
         1   Present

         6.3.5   **Endocarp texture**
         1   Coriaceous
         2   Subcoriaceous
         3   Other (specify in descriptor **6.5 Notes**)

★   **6.3.6**   **Fruit-disc shape**
The fruit-disc shape is positioned at the end of the coffee cherry
         1   Not marked
         2   Marked but not prominent
         3   Prominent (cylindrical)
         4   Beaked (apex constricted into bottleneck shape)

★   **6.3.7**   **Calyx limb persistence**
         0   No
         1   Yes

★   **6.3.8**   **Fruit length** [mm]   (3.9)
Average of five normal mature green fruits, measured at the largest part

★   **6.3.9   Fruit width** [mm]
Average of five normal mature green fruits, measured at the widest part

★   **6.3.10   Fruit thickness** [mm]
Average of five normal mature green fruits, measured at the thickest part

6.3.11   Pulp thickness
In relation to berry/bean
          3   Thin
          5   Intermediate
          7   Thick

6.3.12   Harvest duration [d]

6.4   Seed

★   **6.4.1   Seed length** [mm]
Maximum length average of five normal mature seeds

★   **6.4.2   Seed width** [mm]
Average of five normal mature seeds, measured at the widest part

★   **6.4.3   Seed thickness** [mm]
Average of five normal mature seeds, measured at the thickest part

6.4.4   Seed colour
(At 11% humidity)
          1   Yellow
          2   Brown-purple
          3   Other (specify in descriptors **6.5 Notes**)

6.4.5   Seed shape   (3.13)
          1   Round
          2   Obovate
          3   Ovate
          4   Elliptic
          5   Oblong
          6   Other (specify in descriptor **6.5 Notes)**

6.5   Notes
Any additional information, especially in the category of 'other' under various descriptors
above, may be specified here

EVALUATION

7. Plant descriptors

7.1   Vegetative
7.1.1   Trunk diameter [cm]
Measured at 5 cm above ground level in seedling and cutting trees, or 10 cm above graft union in grafted tree. Specify approximate tree age

7.1.2   Trunk height [cm]
Measured on the highest trunk, from ground level to top. Specify approximate tree age

7.2   Yield characteristics
For the following descriptors specify the age of tree

7.2.1   Berry weight per tree [kg]
Record on harvested mature berries

7.2.2   Estimated yield
Rate in relation to age and volume of tree
   3   Very few fruits
   5   Few fruits on nearly all branches
   7   Many fruits on all branches

7.3   Fruit and bean characteristics
Record on at least 200 mature fruits

7.3.1   Empty-fruit rate [%]
Scored by floating fruits

7.3.2   100-bean weight [g]   (3.20)
Calculated at (11% moisture) content as follows: ("Bean weight at 0% moisture content" x 100) ∕ ("Bean number" x 0.89)

7.3.3   Out-turn [%]
Ratio of trade coffee (at 11% moisture content) weight over mature cherry weight, calculated as follows: ("Bean weight at 0% moisture content" x 100) ∕ ("Mature cherry weight" x 0.89)

7.3.4   Fruit-filling coefficient
Ratio of bean number over cherry number. As almost all cherries contain two locules, the fruit-filling coefficient varies between 0 (sterility) and 2 (complete fertility)

7.3.5   Caracoli-bean rate [%]   (3.17)

Percentage of caracoli (peaberry) beans (rounded beans form) in the sample

7.3.6   Empty locules [%]

7.4   Biochemical composition

7.4.1   Caffeine content [% DM]

7.4.2   Oil content [% DM]

7.4.3   Sugar content [% DM]

7.4.4   Absence/presence of methylxanthines
    7.4.4.1   Theobromine
        0   Absent
        1   Present

    7.4.4.2   Theophylline
        0   Absent
        1   Present

    7.4.4.3   Theacrine
        0   Absent
        1   Present

7.4.5   Chlorogenic acid content
Refer to the IUPAC numbering system (IUPAC 1976)
    7.4.5.1   Caffeoylquinic acid content [% DM]
    7.4.5.2   Dicaffeoylquinic acid content [% DM]
    7.4.5.3   Feruloylquinic acid content [% DM]

7.5   Organoleptic value

7.5.1   Acidity
        3   Low
        5   Intermediate
        7   High

7.5.2   Bitterness
        3   Low
        5   Intermediate
        7   High

7.5.3   Astringency
3   Low
5   Intermediate
7   High

7.5.4   Beverage-test value
3   Bad
5   Intermediate
7   Good

7.5.5   Degree of torrefaction

7.6   Notes
Specify here any additional information

8. 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

8.1   Drought

8.2   Mineral deficiencies

8.3   Mineral toxicity

8.4   Low temperature

8.5   High temperature

8.6   Waterlogging

8.7   Lodging

8.8   Notes
Specify here any additional information

9. 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 **9.5 Notes**. 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   Insects

		Causal organism	Common name
	9.1.1	*Dysmicoccus cryptus*	Mealy bug
	9.1.2	*Hypothenemus hampeii* (syn. *Stephanoderes hampeii*)	Coffee berry borer
	9.1.3	*Leucoptera coffeella*	White coffee leaf miner
	9.1.4	*Xyleborus morstatti*	Black coffee twig borer
	9.1.5	*Xylotrechus quadripes*	White stem borer
	9.1.6	*Xylosandrus compactus*	Shot hole borer
	9.1.7	*Planococcus* spp.	Mealy bug
	9.1.8	*Coccus viridis*	Green scale

9.2   Nematodes

	9.2.1	*Meloidogyne* spp.	Root knot nematode
	9.2.2	*Pratylenchus* spp.	Root lesion nematode
	9.2.3	*Hemicriconemoides* spp.	

9.3   Fungi

	9.3.1	*Botrytis cinerea*	Warty berry
	9.3.2	*Ceratocystis fimbriata*	Woodstain disease, 'llaga macana'
	9.3.3	*Cercospora coffeicola*	Brown eye spot
	9.3.4	*Colletotrichum* spp.	Coffee berry disease
	9.3.5	*Corticium salmonicolor*	Pink disease
	9.3.6	*Fusarium oxysporum*	Santavery root disease
	9.3.7	*Fusarium stilboides*	Fusarium bark disease
	9.3.8	*Gibberella xylarioides* (anamorph: *Fusarium xylarioides*)	Tracheomycosis
	9.3.9	*Hemileia coffeicola*	Powdery rust
	9.3.10	*Hemileia vastatrix*	Coffee leaf rust, orange rust
	9.3.11	*Koleroga noxia*	Blackrot disease
	9.3.12	*Mycena citricolor*	Leaf spot
	9.3.13	*Pellicularia koleroga*	Koleroga
	9.3.14	*Phoma costarricensis*	Phoma
	9.3.15	*Poria hypolateritia*	Red root disease

9.3.16	*Rhizoctonia solani*	Collar rot disease
9.3.17	*Rosellinia* spp.	Black root disease

9.4   Bacteria

9.4.1	*Pseudomonas syringae* pv. *garcae*	Bacterial blight of coffee

9.5   Notes
Specify here any additional information

10. Biochemical markers

10.1   Isozyme
For each enzyme, indicate the tissue analysed and the zymogram type. A particular enzyme can be recorded as 10.1.1; 10.1.2, etc. Examples include: Acid phosphatase (ACPH); Esterases a and ß (EST A and B); Isocitrate dehydrogenase (ICD); Malate dehydrogenase (MDH); Phosphogluconate dehydrogenase (PGD); Phosphoglucose isomerase (PGI); Phosphoglucose mutase (PGM)

10.2   Other biochemical markers
(e.g. Polyphenol profile)

11. Molecular markers
Describe any specific discriminating or useful trait for this accession. Report probe-enzyme combination analyzed

11.1   Restriction Fragment Length Polymorphism (RFLP)
Record the method (used restriction enzyme-probe and analyzed DNA origin, i.e. genomic, chloroplastic or mitochondrial) and the fragment weights

11.2   Random Amplified Polymorphic DNA (RAPD)
Record the experiment conditions (solution compositions, amplifying program), the user primer sequence and the amplified fragment weights

11.3   Other molecular markers
(e.g. Specific Amplicon Polymorphism (SAP))

12. Cytological characters

12.1   Chromosome number

12.2   Ploidy level
(e.g. aneuploid or structural rearrangement)

12.3   Pollen viability
Specify the method, i.e. germination in a solution or grain staining

12.4   Meiosis chromosome associations
Average of 50 microspore mother cells, observed during metaphase 1

12.4.1   Univalent number per microspore mother cell
12.4.2   Bivalent number per microspore mother cell
12.4.3   Trivalent number per microspore mother cell
12.4.4   Quadrivalent number per microspore mother cell

12.5   Incompatibility alleles
Specify the method used and record the allelic group

12.6   Other cytological characters
(e.g. Stomate density and size)

13. Identified genes
Describe any known specific mutant present in the accession

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List of Descriptors

Almond (revised) * (E)	1985
Apple (E)	1982
Apricot * (E)	1984
Avocado (E,S)	1995
Bambara groundnut (E)	1987
Banana (revised) * (E)	1984
Barley (E)	1994
Beta (E)	1991
Black pepper (E,S)	1995
Brassica and *Raphanus* (E)	1990
Brassica campestris L. (E)	1987
Buckwheat (E)	1994
Capsicum (E,S)	1995
Cardamom (E)	1994
Cashew (E)	1986
Cherry * (E)	1985
Chickpea (E)	1993
Citrus (E)	1988
Coconut (E)	1992
Colocasia * (E)	1980
Cotton (Revised) (E)	1985
Cowpea (E)	1983
Cultivated potato * (E)	1977
Echinochloa millet * (E)	1983
Eggplant (E,F)	1990
Faba bean * (E)	1985
Finger millet (E)	1985
Forage grass * (E)	1985
Forage legumes * (E)	1984
Grape * (E)	1983
Groundnut (E,S,F)	1992
Kodo millet * (E)	1983
Lentil * (E)	1985
Lima bean * (E)	1982
Lupin/Lupinos * (E,S)	1981
Maize (E,S,F)	1991
Mango (E)	1989
Medicago (Annual) * (E,F)	1991
Mung bean * (E)	1980
Oat * (E)	1985
Oca * (S)	1982
Oil palm (E)	1989
Panicum miliaceum and *P. sumatrense* (E)	1985
Papaya (E)	1988
Peach * (E)	1985
Pear * (E)	1983
Pearl millet (E,F)	1993
Phaseolus acutifolius (E)	1985
Phaseolus coccineus * (E)	1983
Phaseolus vulgaris * (E)	1982
Pigeonpea (E)	1993
Pineapple (E)	1991
Plum * (E)	1985
Potato variety * (E)	1985
Quinua * (E)	1981
Rice * (E)	1980
Rye and Triticale * (E)	1985
Safflower * (E)	1983
Sesame * (E)	1981
Setaria italica and *S. pumilia* (E)	1985
Sorghum (E,F)	1993
Soyabean * (E,C)	1984
Strawberry (E)	1986
Sunflower * (E)	1985
Sweet potato (E,S,F)	1991
Tomato (E, S, F)	1996
Tropical fruit * (E)	1980
Vigna aconitifolia and *V. trilobata* (E)	1985
Vigna mungo and *V. radiata* (Revised) * (E)	1985
Walnut (E)	1994
Wheat (Revised) * (E)	1985
Wheat and *Aegilops* * (E)	1978
White Clover (E)	1992
Winged Bean * (E)	1979
Xanthosoma (E)	1989
Yams * (E)	1980