

# Descriptors for farmers' knowledge of plants





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## INTRODUCTION

This list of descriptors has been developed by Bioversity International to provide a standard format for the gathering, storage, retrieval and exchange of farmers' knowledge of plants. The list aims to capture key characteristics, uses and values of cultivated and wild plants as described by farmers and other people in farming communities. Many of these descriptors are not included in conventional descriptor lists. Wild and weedy plants are also covered by this list since they often play a significant role in farming communities, being useful from a socio-economic and ecological standpoint.

The list 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'. We hope that this list, which is the result of many years of review of fieldwork by scientists and field practitioners, will become an important tool for integrating biology and traditional knowledge. Although the list is primarily targeted at the plant genetic resources community, to increase the range of knowledge recorded during plant collection, its widespread use by others, including communities and organizations, is encouraged. It is intended to be user-friendly and practical, whilst balancing inclusiveness and concision.

The content, coding and format of this list are not yet definitive but represent an important starting point in developing a standardized recording system. Future refinements, based on feedback received from farmers and users, will ideally evolve towards a unified and harmonized international system for documenting farmers' knowledge of plants.

The descriptors listed herein are expected to be compatible with other scientifically validated Bioversity crop descriptor lists.

Bioversity strongly recommends that when this descriptor list is used for research purposes, the ISE<sup>1</sup> Code of Ethics available at [http://ise.arts.ubc.ca/global\\_coalition/ethics.php](http://ise.arts.ubc.ca/global_coalition/ethics.php) on intellectual property, be respected by the researcher and discussed with the people and communities participating in the research, or at least that the following statement be taken into consideration:

*The people or communities participating in this research declare their willingness to share their knowledge provided that they are recognized as the source of the information and that this knowledge remains freely available for their use.*

Any suggestions for improvement of this document will be highly appreciated by Bioversity and should be addressed to Adriana Alercia ([a.alercia@cgiar.org](mailto:a.alercia@cgiar.org)).

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<sup>1</sup> International Society of Ethnobiology

### GENERAL COMMENTS

For each descriptor, a brief explanation of content, coding scheme and suggested fieldname (in parentheses) is provided to assist in the computerized exchange of data. Users may want to further expand or reduce this list to meet their specific needs. As long as the desired additions allow for an easy conversion to the format proposed, basic data can be exchanged worldwide in a consistent manner.

- A Collecting form for entering data is available in Annex I.
- If a field allows multiple values, these values should be separated by a semicolon (;) without space(s), (e.g. 5.2 Plant/parts of the plant used:bark;leaf;inflorescence;seed)
- A field for which no value is available should be marked by a hyphen (i.e. Elevation:-).
- Dates are recorded as YYYYMMDD. If the month and/or day are missing this should be indicated by hyphens. Leading zeros are required (i.e. 197506--, or 1975----).
- Latitude and longitude are recorded in an alphanumeric format. If the minutes or seconds are missing, this should be indicated with hyphens. Leading zeros are required.
- Country names: ISO names and/or codes are used for countries. The ISO 3166-1: Code List is available on-line at <http://unstats.un.org/unsd/methods/m49/m49alpha.htm>.
- The preferred language for free text fields (e.g. Location of collecting site and Collector's notes) is English.
- Each form should be uniquely identifiable by the combination of geographical coordinates; fieldwork date (for specimen collection, observations, or interview); and the farmer's or other informant's name and age.
- Essential descriptors in this first phase are highlighted and indicated with asterisks (\*).
- The vernacular term 'wild' is used in the list when referring to any plant that normally grows without cultivation, in a meadow, garden, field, forest, and so on.

#### 1. Identifiers

##### **\*1.1 Fieldwork date [YYYYMMDD]**

Indicate the date on which the fieldwork activity took place.

##### **1.1.1 Fieldwork activity**

- 1 Specimen collection
- 2 Field observation
- 3 Interview (individual, focus group discussion)
- 99 Other (specify in the Collector's notes)

##### **\*1.2 Name of local information provider**

Farmer, other community member or group, teachers, local researchers, etc.

##### **\*1.2.1 Age [y]**

Indicate if this is an estimate.



**\*1.2.2 Main occupation****\*1.2.3 Address****\*1.2.4 Ethnic group**

Name of the ethnic group.

**\*1.3 Name of person conducting the interview**

Indicate the name of the person recording the information.

**2. Plant identification****\*2.1 Genus**

Genus name of the taxon (e.g. *Malus*).

**\*2.2 Species**

Specific epithet of the scientific name (e.g. *domestica*).

**2.3 Common name of crop or wild species**

Name in colloquial language (e.g. pear; malting barley). If possible, indicate in English. However, if this is not known, indicate in the national and/or local language(s).

**\*2.4 Name of cultivar/landrace, botanical variety, or wild form****2.4.1 Name of cultivar/landrace or wild form**

As generally known (e.g. cv. Fuji, Golden Delicious, var. *silvestris*).

**2.4.2 Local vernacular name(s)**

Name(s) given by farmer to cultivar/landrace or wild form. If name for wild form does not exist, please number it such as Wild1; Wild2; etc.

**2.4.2.1 Language (s) of local vernacular name**

Specify local language(s) and/or dialect(s) of the name(s).

**2.4.2.2 Local name meaning(s)**

Describe the meaning(s) of the name(s).

**2.5 Species richness**

Estimate the number of biologically distinct cultivars, varieties, or wild forms known in the site area (locality). This can be more, the same, or less than the number of names recorded above.

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### \*2.6 Biological status

- 1 Wild
- 2 Weedy
- 3 Traditional cultivar/landrace
- 4 Breeding/research material
- 5 Advanced/improved cultivar
- 99 Other (specify in the Collector's notes)

## 3. Site (Ecogeographical context)

### 3.1 Country

Indicate the country name or the ISO code where the observation has been made.

### \*3.2 Latitude<sup>2</sup>

Degrees, minutes and seconds followed by hemisphere, N (North) or S (South) (e.g. 103015S).

### \*3.3 Longitude<sup>2</sup>

Degrees, minutes and seconds followed by E (East) or W (West) (e.g. 0762552W).

### \*3.4 Elevation [m asl]

### 3.5 Location of fieldwork site

Location information below the country level that describes where the fieldwork was carried out. 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 Curitiba in the state of Paraná).

#### 3.5.1 Name of the location or nearest place

Name of the site location or nearest place to site (village, town, city or landmark). The name used may also be created to indicate a place that may not have proper names (e.g. the junction of two named roads).

#### 3.5.2 Distance to site [km]

Distance in km from nearest named place to site.

##### 3.5.2.1 Type of distance

- 1 Road distance
- 2 Straight distance

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<sup>2</sup> To convert from longitude and latitude in degrees (°), minutes (′), seconds (″), and a hemisphere (North or South and East or West) to decimal degrees, the following formula should be used:

$$d^{\circ} m' s'' = h * (d + m / 60 + s / 3600)$$

where h = 1 for the Northern and Eastern hemispheres and -1 for the Southern and Western hemisphere i.e.  
30°30'0" S = -30.5 and 30°15'55" N = 30.265.

### 3.5.3 Direction from nearest named place

Direction of site from nearest named place in degrees relative to North.

### 3.6 Land element and position

Description of the geomorphology of the immediate surroundings of the collecting site, see Fig. 1 below (adapted from FAO, 1990).

- |    |                   |    |  |
|----|-------------------|----|--|
| 1  | Plain level       | 17 | Interdunal depression  |
| 2  | Escarpment        | 18 | Mangrove   |
| 3  | Interfluvium      | 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 | 99 | Other (specify in the Collector's notes)                       |
| 15 | Dune              |    |  |
| 16 | Longitudinal dune |    |  |

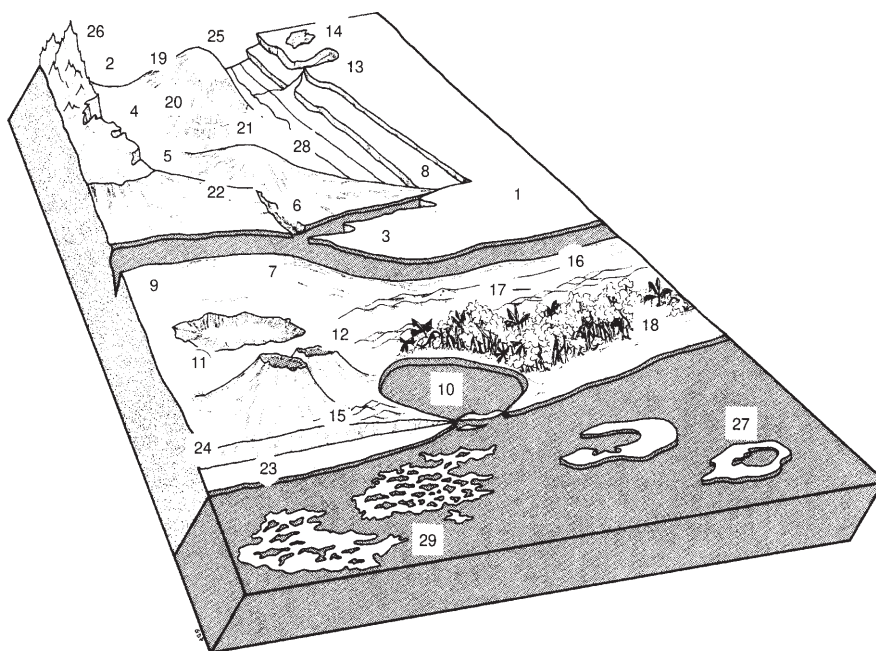


Fig. 1. Land element and position

### 4. Relative abundance

(If describing the population)

#### 4.1 In cultivated areas

##### 4.1.1 Total area of farm land used [ha]

Estimate the farm land used or known to the information provider.

##### 4.1.2 Area cultivated for each cultivar (if more than one) [ha]

Estimate the total area cultivated in the current season or 'last growing season' if the crop is currently off season (for plants that are difficult to count).

##### 4.1.3 Number of plants

Indicate the number of plants or trees planted per cultivar (if plants can be counted).

#### 4.2 In uncultivated areas

(Disturbed or undisturbed areas, with or without management of the plants observed).

##### 4.2.1 Total uncultivated area [ha]

If possible, indicate estimated size of the uncultivated area (within or outside farmed areas), where the plant concerned is known to be present and is collected.

##### \*4.2.2 Relative abundance of the plant

Indicate the approximate abundance of plants or trees in the entire collecting zone as compared to five or more years ago.

- 1 Rare
- 2 Common
- 3 Abundant

##### 4.2.3 Number of collecting sites/niches

Indicate the number of sites from where communities collect the material (i.e. fruits, seeds, etc.).

###### 4.2.3.1 Estimated area of each collecting site [ha]

###### 4.2.3.2 Frequency of collection

- 1 Low
- 2 Medium
- 3 High

###### 4.2.3.3 Reasons for frequency of collection

Indicate the reasons for frequency of collecting (e.g. food scarcity, preference for plant, etc.).

## 5. Traditional knowledge about plants

This section includes descriptors for local/ traditional knowledge about key characteristics of plants, as seen by farmers. Please select the most important ones and list them in order of importance.

### 5.1 Main reasons for using the cultivar/landrace or wild form

Indicate important advantages and/or disadvantages that determine why the plant is used, from a local point of view:

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

### \*5.2 Parts of the plant used

Adapted from TDWG<sup>3</sup> standards. If more than one part is used, multiple values are allowed, separated by a semicolon (;).

- 1 Entire plant
- 2 Branch
- 3 Seedling/germinated seed
- 4 Gall
- 5 Stem/trunk
- 6 Bark
- 7 Leaf
- 8 Flower/inflorescence (calyx, corolla)
- 9 Fruit/infructescence
- 10 Seed
- 11 Root or corm
- 12 Exudate
- 99 Other (specify in descriptor Collector's notes)

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<sup>3</sup> Taxonomic Database Working Group

### **\*5.2.1 Plant uses**

Adapted from TDWG standards. Multiple values are allowed, separated by a semicolon (;).

- 1 Food (fresh, processed, cooked, etc.)
- 2 Food additive
- 3 Fodder or fodder additive (for animals)
- 4 Apiculture (nectar, pollen sources)
- 5 Material (fibres, canes, wood, essential oils, latex, dyes, timber, green manure etc.)
- 6 Fuel (fire wood, charcoal)
- 7 Cultural use (bring poverty, peace; prestige value, antifertility agents, religious, ceremonial/rituals, funeral, birth, marriage, calendar etc.)
- 8 Medicinal (blood, digestive, immune system disorders, cure sores, stomach ache, cough, etc.)
- 9 Environmental use (erosion control, windbreaker, firebreak, boundary, barrier, shade; symbiotic, humidity control, bioindicator)
- 99 Other (specify in descriptor Collector's notes)

### **5.3 Distinguishing traits used by farmers**

Describe the traits or characteristics that the farmer uses to distinguish one cultivar/landrace /wild form of the same species or closely related species from another (e.g. fruit colour, plant size, drought resistance).

#### **\*5.3.1 Parts of the plant**

- 1 Fruit
- 2 Leaf
- 3 Tree
- 4 Flower
- 5 Crown
- 6 Stem/trunk
- 7 Seed
- 99 Other (specify in Collector's notes)

##### **\*5.3.1.1 Trait attribute**

- 1 Colour
- 2 Shape
- 3 Size
- 4 Width
- 5 Length
- 6 Height
- 7 Texture
- 8 Habit
- 9 Taste
- 99 Other (specify in Collector's notes)

**\*5.3.2 Agronomic traits**

- 1 Overall appearance (desirability)
- 2 Yield
- 3 Earliness
- 4 Flowering precocity
- 99 Other (specify in Collector's notes)

**\*5.3.3 Abiotic stresses**

Indicate any susceptibility / resistance that the farmer claims for this particular plant.

- 1 Drought
- 2 High temperature
- 3 Low temperature
- 4 Salinity
- 5 Water logging
- 6 Soil humidity
- 7 Soil pH
- 99 Other (i.e. elevation, light intensity, specify in Collector's notes)

**\*5.3.4 Biotic stresses**

Indicate any susceptibility / resistance to pests and/or diseases that the farmer claims for this particular plant.

**\*5.3.4.1 Diseases**

Specify the common name of the disease (e.g. Apple scab) or the causal organism (e.g. *Venturia inaequalis*).

**\*5.3.4.2 Pests**

Indicate the common name of the pest (Woolly apple aphid) or the causal organism. (e.g. *Eriosoma lanigerum*).

**5.3.4.3 Other biotic stresses**

Specify here any additional biotic stress.

**\*5.3.5 Quality traits related to food uses****\*5.3.5.1 Organoleptic qualities**

Describe particular organoleptic qualities of the plant. 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 Collector's notes)

### **\*5.3.5.2 Nutritional qualities**

Indicate any nutritional quality of the plant as described by the farmer (e.g. makes people grow stronger, high sugar and instant energy, source of water, proteins, vitamins, etc.). Record the farmer's exact wording to the extent possible, using if needed descriptor Collector's notes).

### **5.3.5.3 Other quality traits**

Other quality traits, e.g. 'cooking time' (or those traits that relate to the many other uses highlighted), could be specified here.

### **\*5.3.6 Market traits**

- 1 Marketability
- 2 Transportability
- 3 Shelf life/storage ability
- 99 Other (specify in Collector's notes)

## **5.4 Social aspects**

### **5.4.1 Division of labour by gender**

(This also applies to wild species).

#### **5.4.1.1 Labour**

- 1 Sowing
- 2 Harvesting
- 3 Conservation/storage
- 4 Processing
- 5 Utilization

#### **5.4.1.2 Gender**

- 1 Predominantly female
- 2 Predominantly male
- 3 Both

## **5.5 Socio-economic characteristics**

### **\*5.5.1 Seed supply system**

- 1 Certified material (formal sector)
- 2 Own harvest
- 3 Exchanges with relatives, neighbours
- 4 Exchanges between close villages
- 5 Local /regional market
- 6 Wild/naturally occurring



**5.5.2 Main use of plant**

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

- 1 Home consumption (including for animal fodder)
- 2 For direct sale
- 3 For sale through intermediary
- 4 Exchange, neighbour, friends, family
- 5 Gift giving

**5.5.3 Main form of market outlet**

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

**6. Collector's notes**

Indicate here any additional information. The interviewer is encouraged to add as many notes as are required in order to reflect the knowledge of the farmer that is not already captured by any of the above descriptors.

### ACKNOWLEDGMENTS

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## ANNEX I. Collecting form for farmers' knowledge of plants

ESSENTIAL DESCRIPTORS ARE HIGHLIGHTED

### 1. IDENTIFIERS

FIELDWORK DATE [YYYYMMDD] (1.1):

FIELDWORK ACTIVITY (1.1.1):

NAME OF LOCAL INFORMATION-PROVIDER (1.2):

AGE (1.2.1):

[y]

MAIN OCCUPATION (1.2.2):

ADDRESS (1.2.3):

ETHNIC GROUP (1.2.4):

NAME OF PERSON CONDUCTING THE INTERVIEW (1.3):

### 2. PLANT IDENTIFICATION (see table)

GENUS (2.1):

SPECIES (2.2):

COMMON NAME OF CROP OR WILD SPECIES (2.3):

SPECIES RICHNESS (2.5):

### 3. SITE (ECOGEOGRAPHICAL CONTEXT)

COUNTRY (3.1):

LATITUDE (3.2):

LONGITUDE (3.3):

ELEVATION (3.4) m asl

LOCATION OF FIELDWORK SITE (3.5)

Name of the location or nearest place (3.5.1):

Distance to site (3.5.2): km

Type of Distance (3.5.2.1):

Road distance

Straight distance

Direction from nearest named place (3.5.3):

LAND ELEMENT (3.6):

### 4. RELATIVE ABUNDANCE (see table)

IN CULTIVATED AREAS

TOTAL AREA OF FARM LAND USED (4.1.1): ha

IN UNCULTIVATED AREAS:

NUMBER OF COLLECTING SITES/NICHES (4.2.3):

ESTIMATED AREA OF EACH COLLECTING SITE (4.2.3.1): ha

FREQUENCY OF COLLECTION (if uncultivated) (4.2.3.2)

Low

Medium

High

REASONS FOR FREQUENCY OF COLLECTION (4.2.3.3)

### 6. COLLECTOR'S NOTES

Indicate here any additional information. The interviewer is encouraged to add as many notes as are required in order to reflect farmer's knowledge that is not already captured by any of the above descriptors.







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