Descriptors for

Pistachio

(*Pistacia vera* L.)

UNDER UTILIZED MEDITERRANEAN SPECIES

International Plant Genetic Resources Institute
IPGRI

LIST OF DESCRIPTORS

Almond (revised) * (E)	1985
Apple (E)	1982
Apricot * (E)	1984
Avocado (E,S)	1995
Bambara groundnut (E)	1987
Banana (revised) * (E,F,S) ⁕	1996
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
Coffee (E,F,S) ⁕	1996
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,F,S)	1992
Kodo millet * (E)	1983
Lentil * (E)	1985
Lima bean * (E)	1982
Lupin/Lupinos * (E,S)	1981
Maize (E,F,S)	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
Quinoa * (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,F,S)	1991
Tomato (E,F,S) ⁕	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

IPGRI publications are available free of charge to the libraries of genebanks, university departments, research institutions, etc. On request to Head, Editorial and Publications Unit, titles may also be made available to individuals who can show that they have a need for a personal copy of a publication. E, F, S and C indicate English, French, Spanish and Chinese, respectively. Titles marked * are available only as photocopies. Titles marked ⁕ are available for downloading in portable document format from IPGRI's web site (URL: http://www.cgiar.org/ipgri/).

Descriptors for

Pistachio

(*Pistacia vera* L.)

International Plant Genetic Resources Institute
IPGRI

The International Plant Genetic Resources Institute (IPGRI) is an autonomous international scientific organization operating under the aegis of the Consultative Group on International Agricultural Research (CGIAR). The international status of IPGRI is conferred under an Establishment Agreement which, by March 1997, had been signed by the Governments of Algeria, Australia, Belgium, Benin, Bolivia, Brazil, Burkina Faso, Cameroon, Chile, China, Congo, Costa Rica, Côte d'Ivoire, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Greece, Guinea, Hungary, India, Indonesia, Iran, Israel, Italy, Jordan, Kenya, Malaysia, Mauritania, Morocco, Pakistan, Panama, Peru, Poland, Portugal, Romania, Russia, Senegal, Slovak Republic, Sudan, Switzerland, Syria, Tunisia, Turkey, Uganda and Ukraine. IPGRI's mandate is to advance the conservation and use of plant genetic resources for the benefit of present and future generations. IPGRI works in partnership with other organizations, undertaking research, training and the provision of scientific and technical advice and information, and has a particularly strong programme link with the Food and Agriculture Organization of the United Nations. Financial support for the research agenda of IPGRI is provided by the Governments of Australia, Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, India, Italy, Japan, the Republic of Korea, Luxembourg, Mexico, the Netherlands, Norway, the Philippines, Spain, Sweden, Switzerland, the UK and the USA, and by the Asian Development Bank, CTA, European Union, IDRC, IFAD, Interamerican Development Bank, UNDP and the World Bank.

Citation
IPGRI. 1997. Descriptors for Pistachio (*Pistacia vera* L.). International Plant Genetic Resources Institute, Rome, Italy.

ISBN 92-9043-332-9

This publication is available to download in portable document format from URL:
http://www.cgiar.org/ipgri/

IPGRI
Via delle Sette Chiese 142
00145 Rome
Italy

CONTENTS

PREFACE

Descriptors for Pistachio (*Pistacia vera* L.) was developed by Dr Ettore Barone, University of Palermo, Italy, Ir Paul Van Mele, University of Ghent, Belgium and Dr Stefano Padulosi, IPGRI. A draft version prepared in the internationally accepted IPGRI format for Descriptor Lists was subsequently sent to a number of international experts for their comments and amendments. A full list of the names and addresses of those involved is given in 'Contributors'.

This publication was produced within the framework of the IPGRI Project on Conservation and Use of Underutilized Mediterranean Species (UMS) (URL: **http://cgiar.org/ipgri/Regional/Europe/UMS**), an initiative supported by the Italian Government aiming at promoting better conservation and use of those crops indigenous to the Mediterranean region which have been neglected by science and scarcely safeguarded, in spite of their good economic potential.

IPGRI encourages the collection of data for descriptors in the first four categories of this list – *Passport, Management, Environment and Site, Characterization* – and endorses data in these categories as those that should be available for any accession. However, the number of each of the site and environment descriptor types used will depend on the crop and their importance to the crop's description. Descriptors listed under *Evaluation* allow for a more detailed description of the accession's characters, but generally require replicated site and time trials.

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

This descriptor list is intended to be comprehensive for the descriptors that it contains. This approach assists with the standardization of descriptor definitions. IPGRI does not, however, assume that each curator will document accessions of their collection utilizing all descriptors given. Descriptors should be used when they are useful to the curator for the management and maintenance of the collection and/or to the users of the plant genetic resources. Highly discriminating descriptors are marked with stars (★).

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 IPGRI format, will produce a rapid, reliable and efficient means for information storage, retrieval and exchange, and will assist with the utilization 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.

Annex I contains multicrop passport descriptors developed jointly by IPGRI and FAO, to provide consistent coding schemes for common passport descriptors across crops. These aim to be compatible with both future IPGRI crop descriptors lists and the FAO World Information and Early Warning System (WIEWS) on plant genetic resources.

Any suggestions for improvement on the Descriptor List for Pistachio will be highly appreciated by IPGRI.

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.

Highly discriminating descriptors in this descriptor list are marked with stars (★).

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

(a) the Système International d'Unités (SI units) is used;

(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) 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;

(e) 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 not applicable. 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

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

Absence/presence of terminal leaflet

0	Absent
1 (or +)	Present

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

(h) 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;

(i) dates should be expressed numerically in the format YYYYMMDD, where

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

PASSPORT

1. Accession descriptors

★ 1.1 Accession number

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 should never be re-used. 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).

1.1.1 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

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 Country where maintained

Name of the country in which the sample is maintained. 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., D-10772 Berlin, Germany; Tel. 30-2601-2860; Fax 30-2601-1231, Tlx. 184 273-din-d.

1.5 Site where maintained

Name of institution in which collection is maintained

1.6 Curator's name

Name of officer responsible for maintaining the genetic resources material held at the site specified in descriptor **1.5 Site where maintained**

1.7 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 descriptor **2.3**). Other numbers can be added as 1.4.3, etc.

1.7.1 Other number 1

1.7.2 Other number 2

1.8 Scientific name

★ **1.8.1 Genus**

★ **1.8.2 Species**

★ **1.8.3 Subspecies**

1.8.4 Botanical variety

1.9 Genetic origin

1 Open pollination
2 Artificial pollination
3 Clonal selection

1.10 Pedigree

Parentage or nomenclature, and designations assigned to breeders' material. For interspecific hybrids, the species should be designated as 'hybrid' and the parentage indicated here

★ 1.11 Sex

1 Male 2 Female

1.12 Accession

1.12.1 Accession name

Either a registered or other formal designation given to the accession

1.12.2 Local language

Language in which the accession name is given

1.12.3 Translation/Transliteration

Provide translation of the local cultivar name into English

1.12.4 Year of release of the accession/year of registration

1.12.5 Synonyms

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

1.13 Acquisition date [YYYYMMDD]

Date on which the accession entered the collection

★ 1.14 Type of material received

1 *In vitro* plant
2 Cutting
3 Seed
4 Bud
99 Other (e.g. more than one type, specify in descriptor **1.16 Notes**)

1.15 Accession size

Number of trees/shrubs of an accession or approximate number of seeds (if artificially pollinated) of an accession in the genebank

1.16 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**
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** [YYYYMMDD]

2.5 Country of collecting
Name of the country in which the sample was collected. 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., D-10772 Berlin, Germany; Tel. 30-2601-2860; Fax 30-2601-1231, Tlx. 184 273-din-d.

2.6 Province/State
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
Degrees and minutes followed by N (North) or S (South) (e.g. 1030S). Missing data (minutes) should be indicated with hyphen (e.g. 10—S).

2.10 Longitude of collecting site
Degrees and minutes followed by E (East) or W (West) (e.g. 07625W). Missing data (minutes) should be indicated with hyphen (e.g. 076—W).

★ **2.11 Elevation of collecting site** [m asl]

2.12 Collecting source

0 Unknown
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 area (around city)
  3.4 Other exchange system
4 Institute/Research organization
99 Other (specify in descriptor **2.26 Collector's notes**)

★ 2.13 Number of samples collected

★ 2.14 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 Vegetative
2 Seed
3 Pollen
4 Tissue culture

2.15 Status of sample

0 Unknown
1 Wild
2 Weedy
3 Traditional cultivar/Landrace
4 Breeders line
5 Advanced cultivar
99 Other (specify in descriptor **2.26 Collector's notes**)

2.16 Uses of the accession

1 Nut production
2 Clonal rootstock
3 Seedling rootstock
4 Pollinator
5 Medicinal
6 Forage
7 Wood/timber
99 Other (specify in descriptor **2.26 Collector's notes**)

2.17 Ethnic group

Name of the ethnic group of the farmer donating the sample or of the people living in the area of collecting

2.18 Local/vernacular name

Name given by farmer to crop and cultivar/landrace/weed. State language and dialect if the ethnic group is not provided

2.19 Collecting site population structure

2.19.1 Number of trees sampled

2.19.2 Frequency of accession at collecting site

1 Rare
3 Occasional
5 Frequent
7 Abundant
9 Very abundant

2.19.3 Associated flora

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

2.19.4 Associated mycorrhizal fungi

Were root samples collected? If so, specify which fungi were identified in the laboratory in descriptor **2.26 Collector's notes.**

0 No
1 Yes

2.20 Herbarium specimen

Was a herbarium specimen collected? If so, provide an identification number and indicate in which place (herbarium) the pistachio specimen was deposited, in descriptor **2.26 Collector's notes.**

0 No
1 Yes

2.21 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 **2.26 Collector's notes.**

0 No
1 Yes

2.22 Collecting source environment

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

2.23 Cultural methods

2.23.1 Cropping system

1 Monoculture (specify spacing)
2 Intercropping (specify spacings and type of intercrop)
3 Agropastoralism (specify type of animals)
4 Natural cropping (i.e. wild *Pistacia* species topworked with cultivar)

2.23.2 Propagation method

Method used to produce trees

1 Seed
2 Grafted (specify species, hybrid and/or clone used as rootstock)
3 Tissue culture

2.23.3 Irrigation

1 Rainfed
2 Irrigated (specify average annual amount of water supplied per hectare)
3 Run off
4 River banks
99 Other (specify in descriptor **2.26 Collector's notes)**

2.23.4 Pruning

1 Light (<20% of the whole plant)
2 Medium (20 to 40%)
3 Severe (>40%)

2.24 Plant population density

Quantify plants by hectare

2.25 Prevailing stresses

Information on associated biotic and abiotic stresses and the accession's reaction. Indicate stresses in descriptor **2.26 Collector's notes.**

2.26 Collector's notes

Additional information recorded by the collector (e.g. assessment of genetic erosion) or any specific information on any state in any of the above descriptors

MANAGEMENT

3 Orchard management descriptors

3.1 Accession number (Passport 1.1)

3.1.1 Local plant number (Passport 1.1.1)

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 Accession orchard location

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**)

3.2.1 Block designation

3.2.2 Row number

3.2.3 Tree number within the row

3.3 Propagation method

Method used to produce trees

1 Seed
2 Grafted (specify method used in descriptor **3.11 Notes**)
3 Tissue culture

3.4 Rootstock

Indicate the name of the rootstock used in descriptor **3.11 Notes**

3.5 Grafting establishment [%]

Percentage of grafts that were successful

3.6 Planting year [YYYY]

Specify year tree was planted in the orchard

3.7 Regeneration year [YYYY]

Year (estimate) tree should be propagated for regeneration

3.8 Date of last regeneration or multiplication [YYYYMMDD]

Primary method of regeneration is propagation of clonal material

3.9 Number of times accession regenerated

Since the date of acquisition

★ 3.10 Type of maintenance

1 Vegetative in the field
2 Vegetative in tissue culture
3 Pollen
4 Seed
99 Other (e.g. more than one type, specify in descriptor **3.11 Notes**)

3.11 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 descriptor **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). Missing data (minutes) should be indicated with hyphen (e.g. 10—S).

4.2.2 Longitude

Degrees and minutes followed by E (East) or W (West) (e.g. 07625 W). Missing data (minutes) should be indicated with hyphen (e.g. 076—W).

4.2.3 Elevation [m asl]

4.2.4 Name of farm or institute

4.3 Evaluator's name and address

4.4 Sowing or grafting date [YYYYMMDD]

4.5 Evaluation environment

Environment in which characterization/evaluation was carried out

1 Field
2 Screenhouse
3 Glasshouse
4 Laboratory
99 Other (specify in descriptor **4.14 Notes**)

4.6 Condition of tree

Choose the one condition that best fits the accession at the time of characterization/evaluation

1 Dying
2 Old - declining
3 Mature - diseased
4 Mature - non-vigorous
5 Mature - vigorous
6 Young (not yet bearing)
7 Healthy - cropping poorly
8 Healthy - cropping well

4.7 Seed germination [%]

Specify number of days over which germination is measured

4.8 Field establishment [%]

Specify number of days over which establishment is measured

4.9 Sowing site in the field

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

4.10 Field spacing

4.10.1 Distance between trees in a row [m]

4.10.2 Distance between rows [m]

4.11 Fertilizer

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

4.12 Plant protection

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

4.13 Environmental characteristics of site

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

4.14 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)
99	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	5	Upland
2	Basin	6	Hill
3	Valley	7	Mountain
4	Plateau		

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

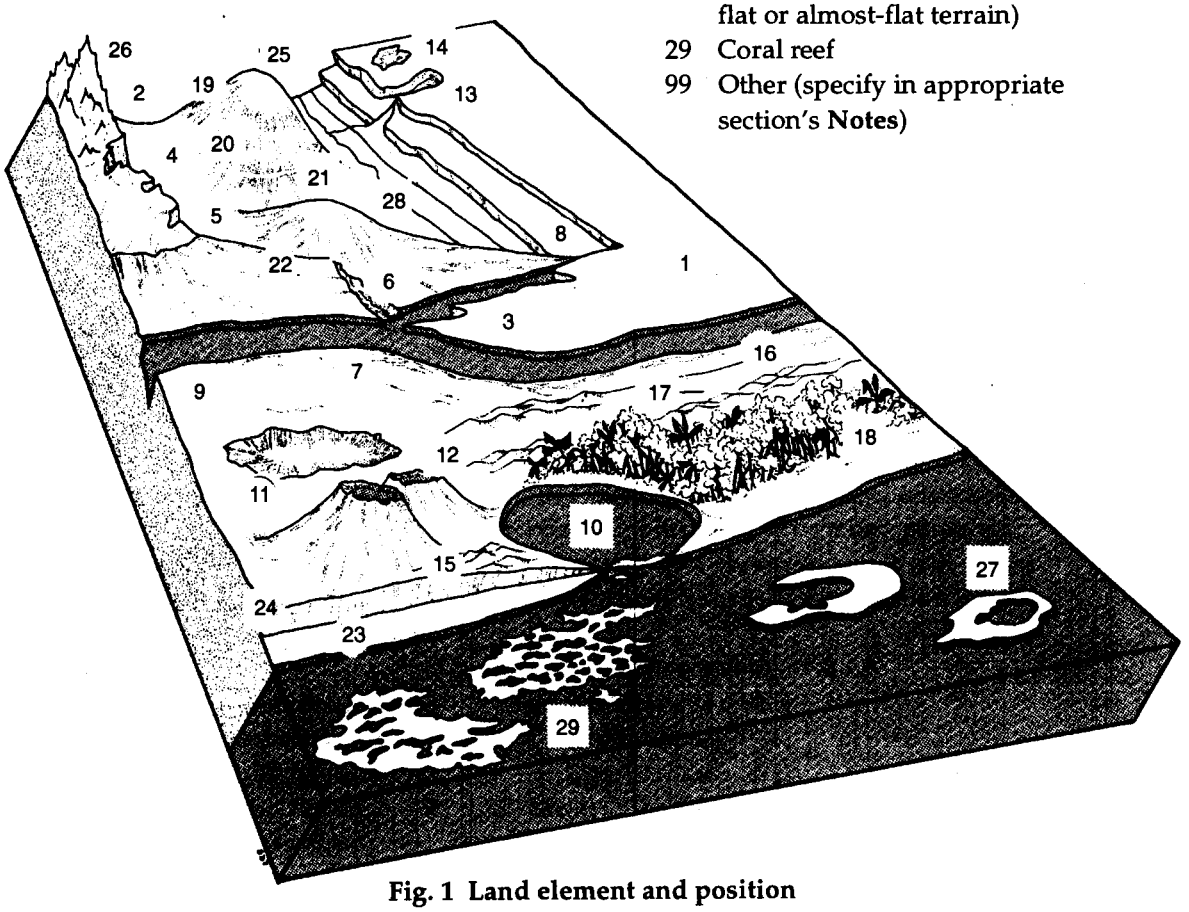

Fig. 1 Land element and position

★ **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
(Adapted from FAO 1990)

5.1.6.1 Tree and shrub cropping

1 Non-irrigated tree crop cultivation
2 Irrigated tree crop cultivation
3 Non-irrigated shrub crop cultivation
4 Irrigated shrub crop cultivation

5.1.7 Overall vegetation surrounding and at the site
(Adapted 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)
99	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 (unspecified)
2 Aeolian sand
3 Littoral deposits
4 Lagoonal deposits
5 Marine deposits
6 Lacustrine deposits
7 Fluvial deposits
8 Alluvial deposits
9 Unconsolidated (unspecified)
10 Volcanic ash

11 Loess
12 Pyroclastic deposits
13 Glacial deposits
14 Organic deposits
15 Colluvial deposits
16 *In situ* weathered
17 Saprolite
99 Other (specify in appropriate section's **Notes**)

5.1.8.2 Rock type

(Adapted from FAO 1990)

1 Acid igneous/metamorphic rock
2 Granite
3 Gneiss
4 Granite/gneiss
5 Quartzite
6 Schist
7 Andesite
8 Diorite
9 Basic igneous/metamorphic rock
10 Ultra basic rock
11 Gabbro
12 Basalt
13 Dolerite
14 Volcanic rock
15 Sedimentary rock
16 Limestone
17 Dolomite
18 Sandstone
19 Quartzitic sandstone
20 Shale
21 Marl
22 Travertine
23 Conglomerate
24 Siltstone
25 Tuff
26 Pyroclastic rock
27 Evaporite
28 Gypsum rock
99 Other (specify in appropriate section's **Notes**)
0 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 Color 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
2 Red
3 Reddish
4 Yellowish red
5 Brown
6 Brownish
7 Reddish brown
8 Yellowish brown
9 Yellow
10 Reddish yellow
11 Greenish, green
12 Grey
13 Greyish
14 Blue
15 Bluish-black
16 Black

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

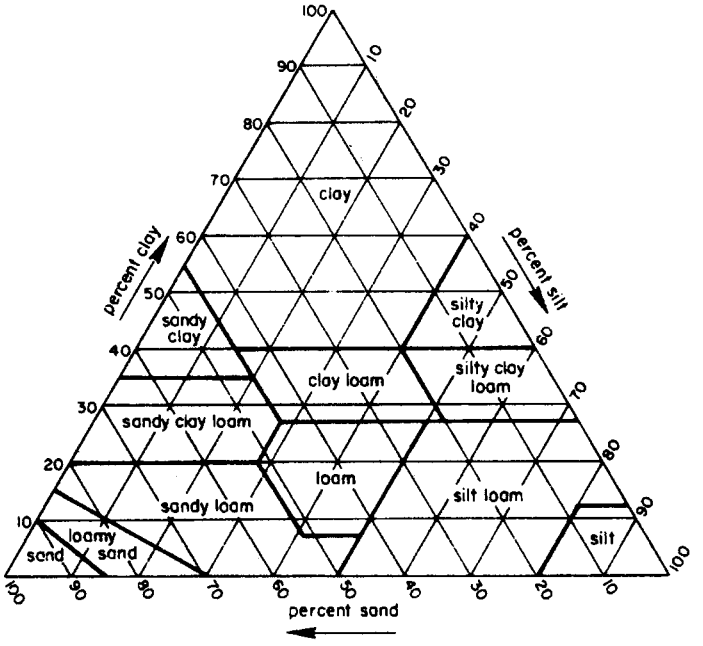

Fig. 2 Soil texture classes

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 µmm
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
99 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** [°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

3 Low

5 Intermediate

7 High

5.1.21.3.2 Date of most recent typhoons or hurricane force winds [YYYYMMDD]

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 [YYYYMMDD]

5.1.21.4.2 Minimum temperature [°C]

Specify seasonal average and minimum survived

5.1.21.4.3 Duration of temperature below 0°C [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

(Specify in appropriate section's Notes)

CHARACTERIZATION

6. Plant descriptors

Average of at least two 'on-years' (production years) data, unless otherwise stated

		Reference variety
6.1	**Growth descriptors**	
6.1.1	**Tree vigour**	
	3 Low	Bianca, Kirmizi, M-57, Sfax, 02-18
	5 Intermediate	Aegina, Alpha, Kerman, M-502
	7 High	Ajami, Beta, Boundoky, Marawhy, Mateur, M-37, Ouleimy, Red Aleppo, Siirt
6.1.2	**Growth habit**	
(See Fig. 3)		
	1 Erect	Ashoury, Larnaka, Maknassy
	2 Semi-erect	Alpha, Kerman, Sfax, Uzun
	3 Spreading	Aegina, Mateur, Cerasola, Djalab, Ahmar, Gamma, Oady
	4 Drooping	Batoury, Eirnora, Joley

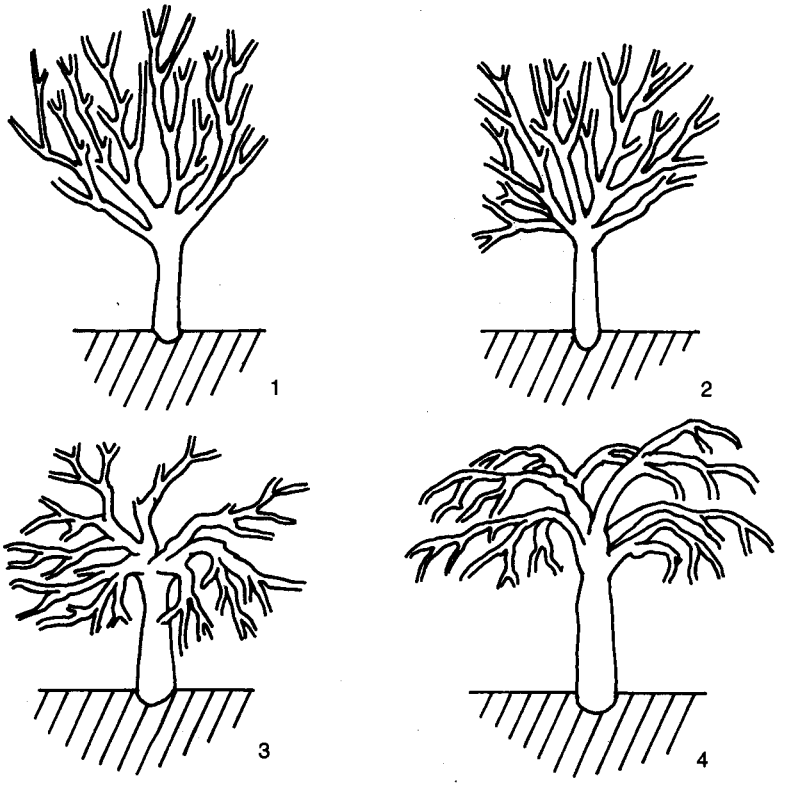

Fig. 3 Growth habit

6.1.3 Branching habit

3	Sparse	Ashoury, Gamma, Larnaka
5	Intermediate	Kerman, Ouleimy
7	Dense	Alpha, Beta, Marawhy

6.1.4 Apical dominance

To be estimated as number of lateral branches on one- and two-year old wood

3	Weak	Marawhy
5	Intermediate	Batoury, Kerman
7	Strong	Cerasola, Gamma, Larnaka

6.2 Leaf descriptors

For the following descriptors, average of 20 fully expanded representative leaves, collected from different trees when shoots are lignified. Do not select leaves that are out of the ordinary due to disease, nutritional imbalances and excessive vigour. For qualitative characteristics, indicate the predominant one

6.2.1 Leaf length [cm]

Measured from the base of petiole to the tip of terminal leaflet. (See Fig. 4)

6.2.2 Leaf width [cm]

Measured at the widest part. (See Fig. 4)

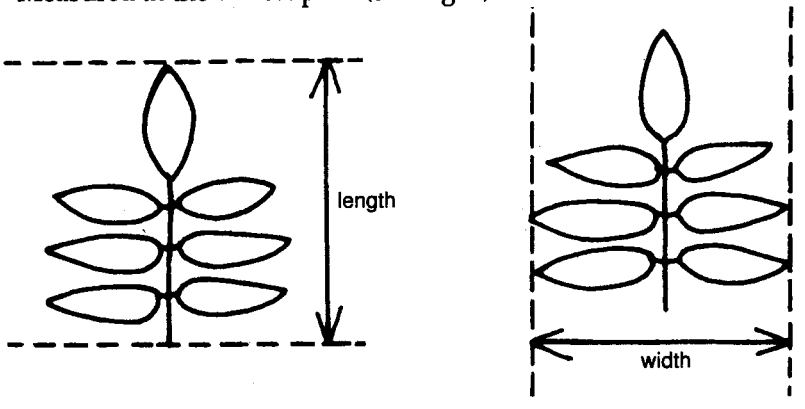

Fig. 4 Leaf length and width

6.2.3 Number of leaflets

★ **6.2.4 Terminal leaflet length** [cm]

(See Fig. 5)

★ **6.2.5 Terminal leaflet width** [cm]

Measured at the widest part. (See Fig. 5)

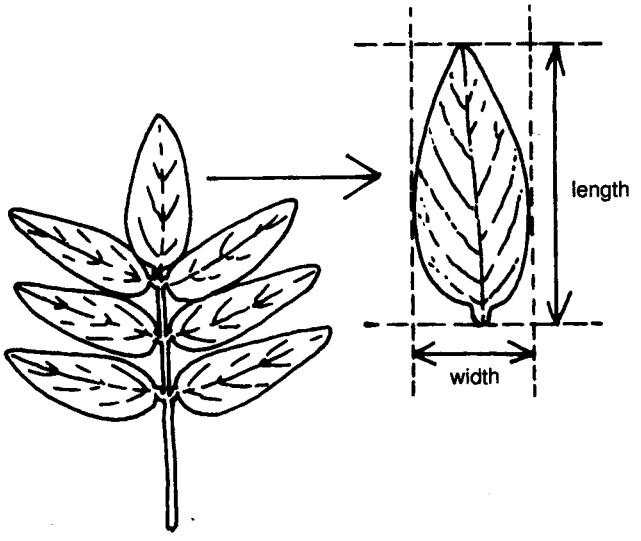

Fig. 5 Terminal leaflet length and width

★ **6.2.6 Terminal leaflet/width ratio**

6.2.7 Terminal leaflet size

1 Similar to basal leaflets
2 Larger than basal leaflets

6.2.8 Terminal leaflet shape

(See Fig. 6)

1 Broad lanceolate
2 Elliptic
3 Ovate
4 Round ovate
5 Roundish
99 Other (specify in descriptor **6.6 Notes**)

Fig. 6 Terminal leaflet shape

6.2.9 Terminal leaflet apex

(See Fig. 7)

1 Acuminate
2 Mucronate
3 Mucronulate
4 Obtuse
5 Retuse
99 Other (specify in descriptor **6.6 Notes**)

Fig. 7 Terminal leaflet apex

6.2.10 Terminal leaflet base

(See Fig. 8)

1 Attenuate
2 Obtuse
3 Truncate
4 Oblique
99 Other (specify in descriptor **6.6 Notes**)

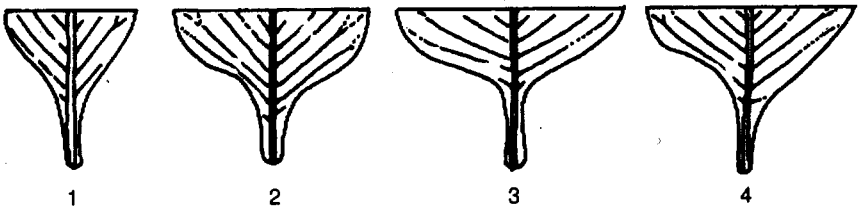

Fig. 8 Terminal leaflet base

6.2.11 Terminal leaflet margin

1 Flat
2 Wavy

6.2.12 Petiole shape

1 Flattened
2 Rounded
3 Rounded straight adaxially

6.2.13 Leaf colour

Evaluated at adaxial side, at time when shoot is woody, before harvest time

1 Light green
2 Green
3 Dark green

6.2.14 One-year-old shoot colour

To be evaluated at winter time

1 Very light brown
2 Light brown
3 Brown

6.2.15 Leaf midrib indumentum

1 Glabrous
2 Sparsely puberulent

6.3 Inflorescence and fruiting habit

Average over at least two 'on-years' (except for descriptors **6.3.4** and **6.3.5** for females). Bud descriptors are evaluated at harvest time, inflorescence descriptors at peak bloom period

★ **6.3.1 Female reference standard**

Indicate which cultivar has been used for the following descriptors where applicable. If possible use one of the listed cultivars. If not available, use main locally used cultivar

1 Aegina
2 Ashoury
3 Batoury
4 Bianca
5 Kerman
6 Larnaka
7 Mateur
8 Ohadi
9 Sfax
10 Siirt
99 Other (specify in the descriptor **6.6 Notes**)

★ **6.3.2 Male reference standard**

Indicate which cultivar has been used for the following descriptors where applicable. If possible use one of the listed cultivars. If not available, use main locally used cultivar

1 Alpha (syn. A)
2 Ask
3 Beta (syn B)
4 Chico
5 Enk
6 Gamma
7 M-57
8 Nazareth (syn. Naz.)
9 M-11
10 Peters
99 Other (specify in the descriptor **6.6 Notes**)

★ **6.3.3 Flowering precocity**

Specify number of years from Graft or Seed to first flower (i.e. 4 G indicates first flower produced 4 years from graft establishment)

★ **6.3.3.1 Years before (-) or after (+) reference standard**

6.3.3.2 Years from graft or seed to first yield

Of at least 300 nuts/tree. Specify number of years as above

6.3.4 Inflorescence bud dry weight [DW g]

Average of 20 buds during off-years for female [1]

6.3.5 Inflorescence bud shape

Evaluated during off-years for female. (See Fig. 9)

1 Broadly ovate
2 Narrowly ovate
3 Conical

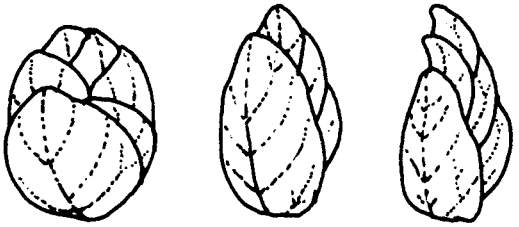

Fig. 9 Inflorescence bud shape

6.3.6 Inflorescence bud colour

1 Reddish brown
2 Light brown
3 Brown
4 Dark brown

6.3.7 Inflorescence abundance

Rate in relation to reference standard of same age

3 Sparse
5 Intermediate
7 Dense

6.3.8 Inflorescence rachis length [cm]

Average of 20 inflorescences at peak bloom period

[1] Weight of buds here as well as the weight of kernels and nuts in following descriptors should always be calculated using material dried in a ventilated oven at 60°C for 24 h

6.3.9 Number of primary lateral inflorescence branches

Average of 20 inflorescences at peak bloom period

6.3.10 Alternate bearing

Estimated as percentage of inflorescence bud drop in on-years

1	Slight	< 35%
2	Moderate	35% - 65%
3	Significant	> 65%

6.4 Nut and kernel

Descriptors within this section should be used on healthy nuts at harvest time, unless otherwise specified. (See Fig. 10)

6.4.1 Hull dehiscence

Evaluated at maturity

1 Slightly dehiscent
2 Dehiscent

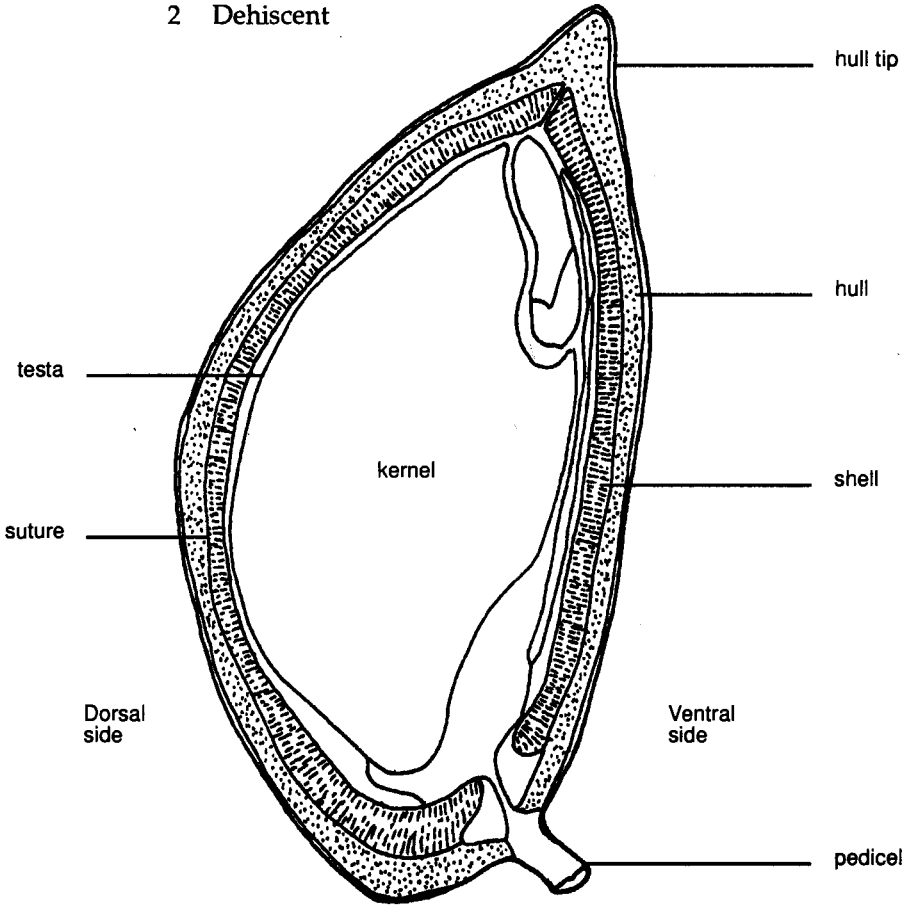

Fig. 10 Lateral section of a *Pistacia vera* fruit

6.4.2 Hull consistency

1 Juicy
2 Dry

6.4.3 Hull tip

Evaluated at maturity

3 Little pronounced
5 Pronounced
7 Strongly pronounced

6.4.4 Hull colour

1 Light cream
1 Yellow-white group
2 Orange-white group
3 Yellow-orange group
4 Orange-red group
5 Red group
6 Red-purple group
99 Other (specify in descriptor **6.6 Notes**)

6.4.5 Hull colour homogenity

(See Fig. 11)

0 No (Hull tip colour clearly different from rest of hull) Batoury
1 Yes (Colour equally distributed) Ashoury

Fig. 11 Hull colour homogeneity

★ **6.4.6 Nut length** [mm]

Average of 20 nuts, measured from most distant points along main seed axis. (See Fig. 12)

★ **6.4.7 Nut width** [mm]

Average of 20 nuts, measured from the widest points perpendicular to main seed axis (See Fig. 12)

★ **6.4.8 Nut thickness** [mm]

Average of 20 nuts, measured at widest part perpendicular to suture. (See Fig. 12)

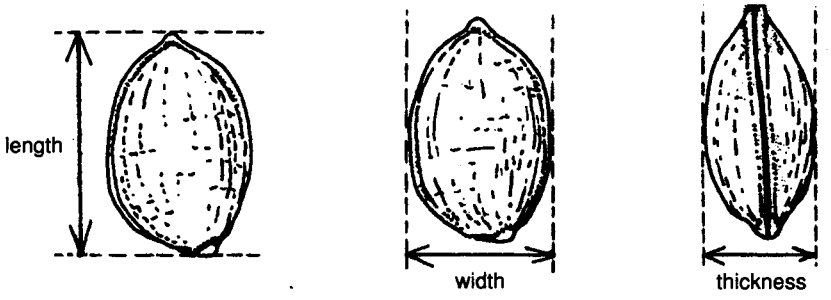

Fig. 12 Nut length, width and thickness

★ **6.4.9 Nut shape**

(See Fig. 13)

1	Roundish	(l/w < 1.5)	Ghochi, Kaleh Kerman, Ohadi
2	Ovoid	(1.5 < l/w <1.8)	Batoury, Bianca, Mateur, Red Jalap
3	Elongated	(l/w > 1.8)	Nab-al-Djamal, Joley, Uzun
4	Narrowly cordate		
5	Cordate		

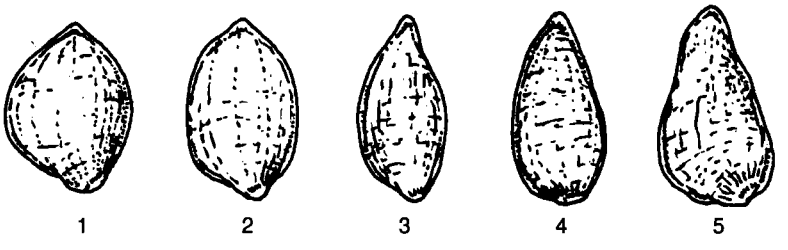

Fig. 13 Nut shape

★ **6.4.10 Shell apex**

(See Fig. 14)

1	Flattened	Batoury
2	Rounded	Uzun
3	Symmetrically pointed	Marawhy
4	Asymmetrically pointed	Mateur

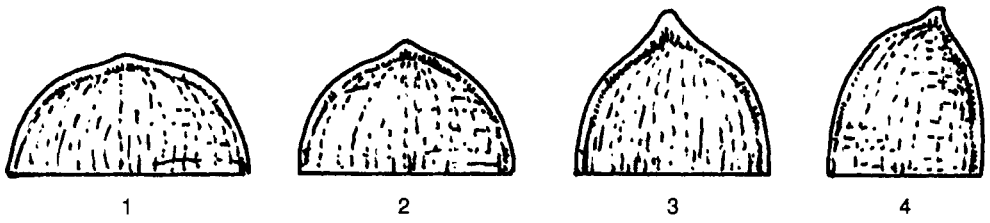

Fig. 14 Shell apex

★ **6.4.11 Depression of shell near pedicel scar**

Front and lateral view of shell. (See Fig. 15)

0	Absent	Marawhy
1	Slight	Mateur
2	Pronounced	Batoury

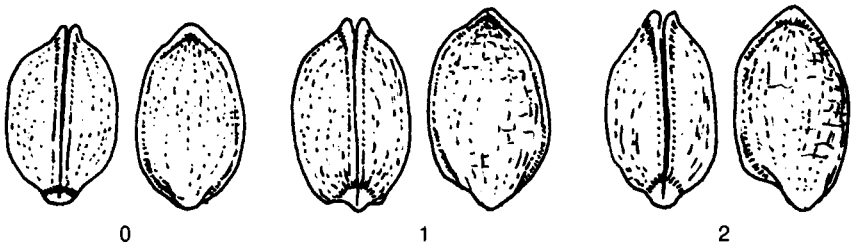

Fig. 15 Shell depression

6.4.12 Nut abscission

3	Easy
5	Medium
7	Difficult

6.4.13 Pedicel scar colour

1	Lighter than shell colour	Siirt, Nab-al-Djamal
2	Similar to shell colour	Uzun
3	Darker than shell colour	

★ **6.4.14 Pedicel scar shape**

1	Orbicular
2	Ovate
3	Elliptic
4	Elongated
99	Other (specify in descriptor **6.6 Notes**)

★ **6.4.15 Pedicel scar elevation**

(See Fig. 16)

1	Flattened	Siirt, Batoury
2	Protruding	Marawhy, Ashoury

Fig. 16 Pedicel scar elevation

★ **6.4.16 Suture elevation**

(See Fig. 17)

3	Low	Marawhy, Mateur
7	High	Batoury

Fig. 17 Suture elevation

★ **6.4.17 Split nuts** [%]

★ **6.4.18 Tendency to early nut splitting**

Measured four weeks prior to harvest

3	Low	Red Aleppo
5	Moderate	Kerman
7	High	

★ **6.4.19 Position of suture opening**

1 Dorsal side only
2 Mainly dorsal side
3 Ventral side only
4 Mainly ventral side
5 Dorsal and ventral side completely

★ **6.4.20 Suture opening**

Evaluated at harvest time. (See Fig. 18)

3	Narrow	Uzun
5	Moderate	Ashoury
7	Wide	Ohari, Kaleh Ghochy

Fig. 18 Suture opening

6.4.21 Tendency to shell staining

Record at harvest time

3	Low	Uzun
5	Intermediate	Ashoury
7	High	Mateur, Nab-al-Djamal

★ **6.4.22 Blank production** [%]

(Approximate percentage)

★ **6.4.23 100-Nut weight** [DW g]

Record the mean of healthy dry nuts

★ **6.4.24 Number of nuts in 100 g**

Evaluated using healthy ready-for storage nuts

★ **6.4.25 100-Kernel weight** [g]

Average of healthy dry kernels

★ **6.4.26 Kernel dry weight/nut dry weight X 100**

6.4.27 Kernel length [mm]

Average of 20 kernels, measured from most distant points along main seed axis. (See Fig. 19)

6.4.28 Kernel width [mm]

Average of 20 kernels, measured on the widest points perpendicular to main seed axis (See Fig. 19)

6.4.29 Kernel thickness [mm]

Average of 20 nuts, measured at the widest part perpendicular to cotyledon suture. (See Fig. 19)

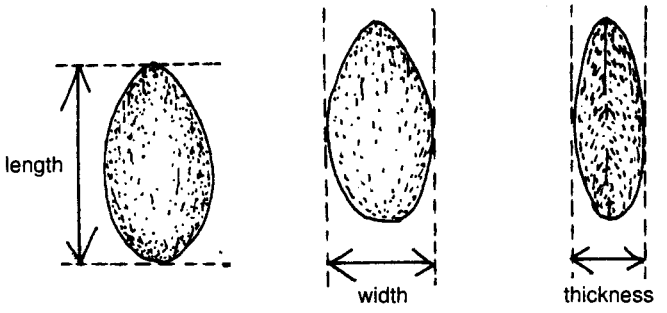

Fig. 19 Length, width and thickness of kernel

6.4.30 Kernel flavour

1 Satisfactory
2 Unsatisfactory

★ ### 6.4.31 Kernel colour

Based on 20 randomly selected kernels.

1	Yellowish	Kerman
2	Yellowish green	Ashoury, Mateur
3	Green	Bianca
99	Other (specify in descriptor **6.6 Notes**)	

★ ### 6.4.32 Testa colour

Based on 20 randomly selected kernels.

1	Greyish	Boundouky
2	Reddish	Oleimy
3	Deep red	Bayadi
99	Other (specify in descriptor **6.6 Notes**)	

6.5 Phenology descriptors

★ ### 6.5.1 Date of vegetative bud break [YYYYMMDD]

When over 50% of terminal buds have enlarged and the bud scales have split exposing the green of the leaves inside

★ **6.5.1.1 Days before (-) or after (+) reference standard [d]**

★ **6.5.1.2 Days of inflorescence bud break before (-) or after (+) vegetative bud break [d]**

★ **6.5.2 First bloom date** [YYYYMMDD]
When 5% of flowers are opened

★ **6.5.3 Peak bloom date** [YYYYMMDD]
When 50% of flowers are opened

★ **6.5.3.1 Days before (-) or after (+) reference standard [d]**

★ **6.5.4 Last bloom date** [YYYYMMDD]
When last flowers are opened

★ **6.5.5 Harvest date** [YYYYMMDD]
When hull separates easily from the shell

★ **6.5.5.1 Days before (-) or after (+) reference standard [d]**

6.5.6 Homogeneity in nut ripening
0 No
1 Yes

★ **6.5.7 Beginning of defoliation** [YYYYMMDD]
Record when trees begin to defoliate

6.5.7.1 Days before (-) or after (+) reference standard

★ **6.5.8 Defoliation date** [YYYYMMDD]
When trees are completely defoliated

6.5.8.1 Days before (-) or after (+) reference standard [d]

6.5.9 Tendency to alternate bearing
Provide an indicative value of the tendency to alternate bearing of the cultivar (e.g. percentage of the production in an off-year in respect to an on-year)

6.6 Notes
Specify here any additional information

EVALUATION

7. Plant descriptors

7.1 Chilling requirements

Number of hours of temperatures below 7°C

1 Low (< 600 h)
2 Medium (600-1200 h)
3 High (> 1200 h)

7.2 Yield

7.2.1 Cropping efficiency [g/cm²]

Nuts yield per unit trunk cross-sectional area. Trunk measurement 20 cm above graft union in grafted tree or 40 cm above ground level in seedling tree

★ **7.2.2 Estimated yield**

Rate in relation to age and volume of tree

3 Low
5 Intermediate
7 High

7.3 Kernel

★ **7.3.1 Chemical composition**

7.3.1.1 Kernel protein content [%]
7.3.1.2 Kernel oil content [%]
7.3.1.3 Kernel ash content [%]

★

7.3.2 Storage quality

Evaluated 3 months after harvest

★ **7.3.2.1 Kernel rancidity potential** [%]

Polyunsaturated fatty acids content

7.3.2.2 Kernel bitterness

3 Weak
7 Strong

7.3.2.3 Kernel crispness

0 No
1 Yes

7.3.2.4 Kernel sweetness

0 No
1 Yes

7.3.2.5 Kernel firmness

0 No
1 Yes

7.4 Pollen

7.4.1 Pollen normal [%]

Incidence of normal grains (normal pollen grains are those ± equiassic and having an acceptable number and disposition of apertures)

7.4.2 Pollen deformed and/or aborted [%]

Incidence of deformed and/or aborted pollen grains

7.4.3 Ratio of normal/aborted pollen grains

Ratio of the percentages of normal pollen grains over those deformed/aborted

7.4.4 Pollen vitality

Intensity of pollen grain colour after being stained with proline

1 Scarcely coloured
2 Intensively coloured

7.4.5 Pollen fertility

Intensity of pollen grain colour after being stained with fluorescein

1 Scarcely coloured
2 Intensively coloured

7.5 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:

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

8.1 Low temperature

8.1.1 Susceptibility to frost damage in spring

8.2 High temperatures

8.2.1 Sunburn susceptibility of hull

8.2.2 Sunburn susceptibility of kernel

8.2.3 Sunburn susceptibility of trunk

8.3 Salinity

8.4 Mineral deficiency

1 Nitrogen
2 Phosphorus
3 Potassium
4 Boron
5 Zinc
6 Copper
99 Other (specify in descriptor **8.8 Notes**)

8.5 Mineral toxicity

1 Boron
2 Zinc
3 Chloride
4 Copper
5 Calcium
99 Other (specify in descriptor **8.8 Notes**)

8.6 Waterlogging

8.7 Drought

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 **9.9 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

Organisms marked with an asterisk are those found to be of major importance in recent literature sources such as Kaska *et al.* (1995) among others.

	Causal organism	Taxonomic order or common name
9.1	**Polyphagous insects**	
9.1.1	*Anapleura lentisci*	Aphidae
9.1.2	*Carpocorus pudicus*	Heteroptera
9.1.3	*Estenoborus persisi*	Coleoptera
9.1.4	*Graphosoma lineatum*	Heteroptera
9.1.5	*Scheidereria pistaciella, S. pistaciicola*	Lepidoptera
9.1.6	*Spilostethus pandurus*	Pistachio shoot-hole borer
9.1.7	**Sulamicerus stali*	Cicadellidae
9.1.8	*Tinea pistaciae*	Pistachio shoot-hole borer
9.2	**Stem-feeding insects**	
9.2.1	*Capnodis cariosa*	Coleoptera
9.2.2	*Agrillus veridi ceruleus* subsp. *esfandiarinus*	Pistachio shoot-hole borer
9.2.3	**Hylesinus vestitus = Acrantus vestitus*	Pistachio bark beetle, pistachio shoot-hole borer
9.2.4	**Kermania pistaciella*	Pistachio twig borer
9.3	**Foliage-feeding insects**	
9.3.1	**Agonoscena targionii*	Pistachio psylla
9.3.2	**Anapulvinaria pistaciae*	Pistachio cushion scale
9.3.3	*Ceroplastes rusci*	Homoptera
9.3.4	**Eulecanium rugulosum*	Scale
9.3.5	**Idiocerinus stali*	Pistachio leafhopper
9.3.6	*Melanaspis inopinatus*	Pistachio trunk scale
9.3.7	**Pistaciaspis pistaciae*	Pistachio scale
9.3.8	*Saissetia oleae*	Homoptera
9.3.9	*Slavum wertheimae*	Gall-forming aphid
9.3.10	**Suturaspis pistaciae*	Pistachio white scale
9.3.11	**Thaumetopoea solitaria*	Pistachio bud moth
9.3.12	**Tenuipalpus*	Pistachio mites
9.3.13	*Tetranychus*	Mites
9.4	**Flower-feeding insects**	
9.4.1	*Anthascia* sp.	Coleoptera
9.4.2	*Eriophyte pistacia*	Mites
9.4.3	*Frankliniella occidentalis*	Western flower thrips
9.4.4	*Polydrosus davatchi*	Coleoptera
9.4.5	**Telphusa pistaciae*	Pistachio bud moth
9.4.6	**Thrips iranicus, Thrips pistacia*	Thrips

9.5 Fruit-feeding insects

9.5.1	**Acrosternum hegeriir*	Stink bug
9.5.2	**Amyelois transitella*	Naval orangeworm
9.5.3	*Apomyelois ceratoniae*	Carob moth
9.5.4	*Arimania komaroffi* Ragonot	Lepidoptera
9.5.5	**Brachynema*	Common stink bug
9.5.6	*Brevipalpus lewisi*	Citrus flat mite
9.5.7	*Calocoris norvegicus*	Gmelin bug
9.5.8	**Chlorochroa uhleri, C. ligata*	Stink bug
9.5.9	*Dinarmus pistacia*	Hymenoptera
9.5.10	*Ephestia elutella*	Lepidoptera
9.5.11	**Eurytoma plotnikovi*	Pistachio fruit wasp
9.5.12	*E. pistachiae*	Pistachio wasp
9.5.13	*Gonocerus acuteangulatis, Graphosoma semipunctatum*	Heteroptera
9.5.14	*Leptocoris trivittatus*	Boxelder bug
9.5.15	**Leptoglossus clypealis, L. occidentalis*	Leaf-footed bug
9.5.16	*Liorhyssus hyalinus*	Epicarp lesion
9.5.17	*Lygaeus hesperus*	Hemiptera
9.5.18	*Lygaeus panderus*	Pistachio red bug
9.5.19	**Megastigmus pistaciae*	Pistachio seed chalcid, Pistachio golden fruit wasp
9.5.20	*Neurocolpus californicus, Psallus vaccinola, P. ancorifer*	Epicarp lesion
9.5.21	*Nezara viridula*	Green stink bug
9.5.22	**Plodia interpunctella*	Lepidoptera
9.5.23	*Phytocoris* spp.	(Miridae) Epicarp lesion
9.5.24	**Recurvaria pistaciicola*	Pistachio fruit moth
9.5.25	*Solenostedium bilunatum*	
9.5.26	**Thyanta pallidovirens*	Red-shouldered stink bug, Pistachio nut worm

9.6 Nematodes

9.6.1	**Heterodera mediterranea, Heterodera marioni*	Cyst nematode
9.6.2	*Meloidogyne* spp.	Root knot nematode
9.6.3	*Pratylenchus hamatus, P. neglectus*	Root lesion nematode
9.6.4	*Xiphinema* spp.	Dagger nematode

9.7 Viruses

(Specify in the descriptor **9.9 Notes**) Rozet virus

9.8 Fungi

9.8.1	**Alternaria alternata*	Alternaria late blight
9.8.2	*Alternaria tenuissima*	Alternaria blight
9.8.3	**Armillaria mellea*	Armillaria root rot
9.8.4	*Aspergillus candidus*	
9.8.5	*Aspergillus clavatus*	

9.8.6	**Aspergillus flavus, A. parasiticus*	Seed rot (aflatoxins)
9.8.7	*Aspergillus fumigatus*	
9.8.8	**Aspergillus ochraceus*	Ochratoxins
9.8.9	**Aspergillus niger*	
9.8.10	*Aspergillus* spp.	Aspergillus blights
9.8.11	*Asteromella pistaciarum*	
9.8.12	**Aureobasidium pullulans*	Stigmatomycosis
9.8.13	**Botryosphaeria dothidea*	Botryosphaeria panicle and shoot blight
9.8.14	*Botryosphaeria obtusa*	Stem canker
9.8.15	*Botryodiplodia pistaciae*	
9.8.16	**Botryotinia fuckeliana* (syn. *Botrytis cinerea)*	Botrytis blossom, shoot blight
9.8.17	*Cenangium vagabundum*	
9.8.18	*Camarosporium pistaciae*	Camarosporium shoot
9.8.19	*Chaetomium* spp.	
9.8.20	**Cladosporium herbarum*	
9.8.21	*Cylindrosporium garbowskii*	
9.8.22	*C. pistaciae*	
9.8.23	*Cytospora terebinthi*	Gum canker
9.8.24	*Cochliobolus spicifer*	
9.8.25	**Epicoccum purpurascens*	
9.8.26	*Eutypa lata*	
9.8.27	*Fomes rimosus*	
9.8.28	*Fusarium equiseti*	
9.8.29	*F. roseum*	
9.8.30	*F. solani*	
9.8.31	**F. oxysporum*	
9.8.32	**Fusarium* spp.	Root and stem rot
9.8.33	*Monilia pistaciae*	
9.8.34	*Melampsora pistaciae*	
9.8.35	*Mycosphaerella pistacina*	
9.8.36	**Nematospora coryli*	Stigmatomycosis
9.8.37	**Paecilomyces variotii*	Die-back of young shoots
9.8.38	*Pestalotia breviseta.*	
9.8.39	**Phytophthora* spp.	Gommosis, crown and root rot
9.8.40	*Phyllosticta terebinthi*	
9.8.41	*P. lentisci*	
9.8.42	*Phymatotrichum omnivorum*	Texas root rot
9.8.43	*Penicillium camemberti*	
9.8.44	*P. decumbens*	
9.8.45	*Penicillium* spp.	
9.8.46	**Pestalotiopsis* spp.	
9.8.47	*Phyllactinia suffulta*	
9.8.48	**Phomopsis* sp.	Phomopsis shoot blight

9.8.49	*Pleospora montemartinii*	
9.8.50	*P. pistaciae*	
9.8.51	*Pileolaria terebinthi*	Rust
9.8.52	*Pleurotus ostreatus*	
9.8.53	*Rhizoctonia bataticola*	
9.8.54	*Rhizoctonia solani* (AG-4)	Nursery seedling blight
9.8.55	*Rhizopus* sp.	
9.8.56	*Rosellina necatrix*	
9.8.57	**Schyzophyllum commune*	Schyzophyllum wood decay
9.8.58	*Sclerotinia sclerotiorum*	Sclerotinia shoot blight
9.8.59	*Septogloeum pistaciae*	
9.8.60	**Septoria pistaciae, S. pistacina* (syn. *Mycospharella pisticina*), *S. pistaciarum* (syn. *Mycospherella pistacearum*)	Septoria blight
9.8.61	**Septoria* spp.	Septoria leaf and fruit spot
9.8.62	*Sphaerella pistaciae*	
9.8.63	**Stemphyllium botryosum*	
9.8.64	*Tetracoccosporium* sp.	
9.8.65	*Trichoderma harzianum*	
9.8.66	**Trichothecium roseum*	
9.8.67	*Tzavella roumbos*	Panicle blight
9.8.68	*Uromyces terebinthi* (syn. *Pileolaria terebinthi*)	Rust
9.8.69	**Verticillium albo-atrum, V. dahliae*	Verticillium wilt

9.9 Notes

Specify here any additional information

10. Molecular markers

Describe any specific discriminating or useful trait for this accession. Report probe-enzyme combination analyzed. Below are listed some of the basic methods most commonly used

10.1 Restriction fragment length polymorphism (RFLP)

Report probe/enzyme combination (approach can be used for nuclear, chloroplast or mitochondrial genomes)

10.2 Amplified fragment length polymorphism (AFLP)

Report primer pair combinations and accurate molecular size of products (used for nuclear genomes)

10.3 DNA amplification fingerprinting (DAF); random amplified polymorphic DNA (RAPD); AP-PCR

Accurately report experimental conditions and molecular size of products (used for nuclear genomes)

10.4 Sequence-tagged microsatellites (STMS)
Report primer sequences, and accurate product sizes (can be used for nuclear or chloroplast genomes)

10.5 PCR-sequencing
Report PCR primer sequences, and derived nucleotide sequence (can be used for single copy nuclear, chloroplast or mitochondrial genomes)

10.6 Other molecular markers

11. Cytological characters

11.1 Chromosome number

11.2 Ploidy level
(2x, 3x, 4x, etc.)

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

11.4 Other cytological characters

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

REFERENCES

FAO. 1990. Guidelines for Soil Profile Description, 3rd edition (revised). Food and Agriculture Organization of the United Nations, International Soil Reference Information Centre, Land and Water Development Division. FAO, Rome.

Ferguson, L. (ed.) 1995. Pistachio production. Centre for Fruit and Nut Crop Research and Information. University of California Davies, California, USA, 126p.

Kaska, N., A.B. Küden, L. Ferguson, and T. Michailides (eds.). 1995. Pistachio Nut I. Acta Horticulturae. 425p.

Kornerup, A. and J.H. Wanscher. 1984. Methuen Handbook of Colour. Third edition. Methuen, London.

Munsell Color. 1977. Munsell Color Charts for Plant Tissues, 2nd edition, revised. Munsell Color, Macbeth Division of Kollmorgen Corporation, 2441 North Calvert Street, Baltimore, Maryland 21218, USA.

Padulosi, S., T. Caruso and E. Barone (eds.) 1996. Taxonomy, distribution, conservation and uses of *Pistacia* genetic resources. Report of a workshop, 29-30 June 1995. Palermo, Italy. International Plant Genetic Resources Institute, Rome, Italy, 69p.

Rana, R.S., R.L. Sapra, R.C. Agrawal and Rajeev Gambhir. 1991. Plant Genetic Resources. Documentation and Information Management. National Bureau of Plant Genetic Resources (Indian Council of Agricultural Research). New Delhi, India.

Royal Horticultural Society. 1966, c. 1986. R.H.S. Colour Chart (ed. 1, 2). Royal Horticultural Society, London.

Sheibani, A. 1990. Characteristics of pistachio selected rootstocks. Nahal-O-Bazr, Research Journal. Seed and Plant Improvement Inst., Karaj. Iran. Vol 6: (1,2) 49-59.

Sheibani, A. 1994. Pistachio production in Iran. Pistachio Research Institute, Rafsanjan, Iran.

van Hintum, Th.J.L. 1993. A computer compatible system for scoring heterogeneous populations. Genetic Resources and Crop Evolution 40:133-136.

Venturella, G. 1991. A check-list of Sicilian fungi, Bocconea 2:5-221.

Zohary, M. 1952. A monographic study of the genus *Pistacia*. Palestine J. Bot., Jerusalem series 5(4):187-228.

CONTRIBUTORS

Authors

Dr Ettore Barone
Istituto di Coltivazioni Arboree
Faculty of Agriculture
University of Palermo
Viale delle Scienze
90128, Palermo
ITALY
Tel. (+39) 91-423398
Fax. (+39) 91-6521098
email ebarone@mbox.unipa.it

Dr Stefano Padulosi
IPGRI
Via delle Sette Chiese, 142
00145, Rome
ITALY
Tel. (+39) 6-51892243
Fax (+39) 6-5750309
email s.padulosi@cgnet.com

Ir Paul Van Mele
University of Ghent
Faculty of Agricultural and Applied
Biological Sciences
Lab. Tropical and Sub-Tropical Agriculture
and Ethnobotany
Dept. of Plant Production
Coupure Links,
653B-9000 Ghent
BELGIUM
Tel. (+32) 9-2646089
Fax. (+32) 9-2646241
email paul.vanmele@rug.ac.be

Reviewers

Prof. Bekir Erol Ak
Harran University
Faculty of Agriculture
Dept. of Horticulture
Sanliurfa
TURKEY
Tel. (+90) 414- 2470383
Fax. (+90) 414- 2470385

Dr Ignacio Batlle
IRTA
Centre de Mas Bové
Departament d'Arboricultura
Mediterrània
Apartat 415, E-43280 Reus
SPAIN
Tel. (+34) 77-343252
Fax. (+34) 77-344055
email ignasi@masbove.irta.es

Prof Tiziano Caruso
Istituto di Coltivazioni Arboree
Faculty of Agriculture
University of Naples
Via Università 100
80055, Portici (NA)
ITALY
Tel. (+39) 81-7755141
Fax. (+39) 81-7755114

Prof Francesco Giulio Crescimanno
Istituto di Coltivazioni Arboree
Faculty of Agriculture
University of Palermo
Viale delle Scienze
90128, Palermo
ITALY
Tel. (+39) 91-423398
Fax. (+39) 91-6521098

Dr Laura De Palma
Istituto di Coltivazioni Arboree
Faculty of Agriculture
University of Bari
Via Amendola 165
70126, Bari
ITALY
Tel. (+39) 80-5442982
Fax. (+39) 80-5442813

Prof Luigi Di Marco
Istituto di Coltivazioni Arboree
Università degli Studi di Palermo
Facoltà de Scienze Agrarie
Viale delle Scienze 11
90128, Palermo
ITALY
Tel. (+39) 91-423398
Fax. (+39) 91-6521098

Prof Ahmed El-Oqlah
Dept. of Biological Sciences
Faculty of Science
University of Yarmouk
Irbid
JORDAN
Tel. (+962) 2-271100 ext. 2831
Fax. (+962) 2-274725

Prof Louise Ferguson
Dept. of Pomology
University of California
Kearney Agricultural Center
9420 South Riverbend Dr.
Parlier, CA 93648
USA
Tel. (+1) 209-8912500
Fax. (+1) 209-8912593
email louise@uckac.edu

Prof Ruhinaz Gulcan
Ege University
Faculty of Agriculture
Dept. of Horticulture
35100 Bornova- Izmir
TURKEY
Tel. (+90) 232-3880110
Fax. (+90) 232-3881864

Prof Ahamad Hadj-Hassan
Aleppo University
Faculty of Agriculture
Dept. of Horticulture
021 Aleppo
SYRIA
Fax. (+963) 21- 213490

Prof Abdallah Jaradat
IPGRI
c/o ICARDA
PO Box 5466
Aleppo, SYRIA
Tel. (+963) 21-247485
Fax. (+963) 21-225105/ 213490
email a.jaradat@cgnet.com

Prof Nurettin Kaska
Dept. of Horticulture
Faculty of Agriculture
University of Çukurova
01330, Adana
TURKEY
Tel. (+90) 322-3386748
Fax. (+90) 322-3386388

Dr Abdellamid Khaldi
Institut National de Recherches Forestières
BP 2, 2080 Ariana
TUNISIA
Tel. (+216) 1-230420
Fax. (+216) 1-750557

Prof Mohamed Laghezali
Programme d' Arboriculture Fruitiere
CRSMA, 3 Esplanade du Dr Giguet
BP 578, Meknès
MOROCCO
Tel. (+212) 5-520300
Fax. (+212) 5-515953/512040

Prof Pietro Mazzola
Dipartimento di Scienze Botaniche
Faculty of Agriculture
University of Palermo
Via Archirafi 38
90123, Palermo
ITALY
Tel. (+39) 91-6161493
Fax. (+39) 91-6176089

Prof Themis J. Michailides
Dept. of Pomology
University of California
Kearney Agricultural Center
9420 South Riverbend Drive
Parlier, CA 93648
USA
Tel. (+1) 209-8912500
Fax. (+1) 209-8912593

Dr Mohamed Mlika
INRAT
Institut National de la Recherche Agronomique
Laboratoire d'Arboriculture Fruitière
Avenue de l' Indépendance
Ariana
TUNISIA
Tel. (+216) 1- 230024
Fax. (+216) 1- 231693

Prof Francesco Monastra
Istituto Sperimentale per la Frutticoltura
Via Fioranello 52
00040 Ciampino Aeroporto
Roma
ITALY
Tel. (+39) 6- 79340251
Fax. (+39) 6- 79340158

Prof Vittorino Novello
Istituto di Coltivazioni Arboree
Faculty of Agriculture
University of Bari
Via Amendola 165
70126, Bari
ITALY
Tel. (+39) 80- 5442982
Fax. (+39) 80- 5442813

Prof Francesco M. Raimondo
Istituto di Botanica
Faculty of Agriculture
University of Palermo
Viale delle Scienze
90128, Palermo
ITALY
Tel. (+39) 91- 6161493
Fax. (+39) 91- 617689

Dr Miguel A. Romero
IRTA
Centre de Mas Bové
Departament d'Arboricultura Mediterrània
Apartat 415
E-43280 Reus
SPAIN
Tel. (+34) 77- 343252
Fax. (+34) 77- 344055
email lannoye@masbove.irta.es

Dr Dimos Rouskas
NARF
National Agricultural Research Foundation
Vardates Station
N. Krikello G-35100
Lamias
GREECE
Tel. (+30) 2- 3181246/ 81104
Fax. (+30) 2- 3181822

Dr Ahmed Sheibani
Pistachio Research Institute
PO Box 77375-435
Rafsanjan
IRAN
Tel. (+98) 3431- 2062/3026
Fax. (+98) 3431- 4611

Prof Patrick Van Damme
University of Ghent, Faculty of Agricultural and Applied Biological Sciences
Lab. Tropical and Sub-Tropical Agriculture and Ethnobotany
Dept. of Plant Production
Coupure Links
653B-9000 Ghent
BELGIUM
Tel. (+32) 9 - 2646089
Fax. (+32) 9 - 264 6241
email patrick.vandamme@rug.ac.be

Dr Francisco J. Vargas
IRTA
Centre de Mas Bové
Apartado 415
43280 Reus
SPAIN
Tel. (+34) 77- 343252
Fax. (+34) 77- 344055
email vargas@masbove.irta.es

Prof Giuseppe Venturella
Dept. Botanic Sciences
Faculty of Agriculture
University of Palermo
Via Archirafi 38
90123, Palermo
ITALY
Tel. (+39) 91- 6161493
Fax. (+39) 91- 6176089

Dr Georgios Zakintinos
NARF
National Agricultural Research Foundation
Vardates Station
N. Krikello G-35100
Lamias
GREECE
Tel. (+30) 2- 3181246/ 81104
Fax. (+30) 2- 3181822

Prof Daniel Zohary
Dept. of Evolution, Systematic and Ecology
Hebrew University
91904 - Jerusalem
ISRAEL
Tel. (+972) 2- 792927/ 6585390
Fax. (+972) 2- 792613

ACKNOWLEDGEMENTS

IPGRI wishes to place on record their sincere thanks to the numerous pistachio workers around the world who have contributed directly or indirectly to the development of Descriptors for Pistachio. IPGRI is particularly grateful to Prof Luigi di Marco, University of Palermo and Prof Tiziano Caruso of the University of Naples for having kindly provided support and scientific advice during the development phase of the descriptors. National pistachio descriptors lists of Iran, Turkey and Spain (Istituto di Ricerca i Tecnologia Agroalimentare) have been used as valuable references for the preparation of this document.

Ms Adriana Alercia supervised and coordinated the production of the text up to the pre-publication stage and provided technical expertise. Ms Linda Sears edited the text, and Ms Patrizia Tazza designed the cover and prepared the layout. Dr S. Padulosi designed the illustrations. Mr Paul Stapleton managed the production of the publication. Ir Tom Hazekamp provided scientific direction and supervised the overall process.

The following IPGRI Staff provided substantial technical advice: Drs. Marlene Diekmann and Toby Hodgkin.

ANNEX I. MULTI-CROP PASSPORT DESCRIPTORS

This list of multi-crop passport descriptors has been developed jointly by IPGRI and FAO to provide consistent coding schemes for common passport descriptors across crops. These descriptors aim to be compatible with future IPGRI crop descriptor lists and with the descriptors to be used for the FAO World Information and Early Warning System (WIEWS) on plant genetic resources.

The list should NOT be regarded as a minimum descriptor list, since many additional passport descriptors are essential for the description of crops and need to be recorded. This document lists an initial set of common passport descriptors at the multi-crop level. At a later stage the list could be expanded with additional multi-crop descriptors. For example, descriptors dealing with the use of germplasm are currently not included, but their suitability for inclusion at the multi-crop level will be investigated. Future expansion could even result in the development of more specialized lists of common descriptors at the crop group level.

Printed here is the latest version of the list (1997) which contains two sections. The latter one (FAO WIEWS DESCRIPTORS) lists a number of optional descriptors used in the FAO WIEWS. The list provides descriptions of content and coding schemes, but also provides *suggested* fieldnames (in parentheses) that can assist in the computerized exchange of this type of data.

MULTI-CROP PASSPORT DESCRIPTORS
1. Institute code (INSTCODE) 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 number or an acronym as specified in the Institute database that will be made available by FAO. Preliminary codes (i.e. codes not yet incorporated in the FAO Institute database) start with an asterisk followed by a 3-letter ISO 3166 country code and an acronym.
2. Accession number (ACCENUMB) 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 should never be reused. 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).
3. Collecting number (COLLNUMB) 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.
4. Genus (GENUS) Genus name for taxon. Initial uppercase letter required.
5. Species (SPECIES) Specific epithet portion of the scientific name in lowercase letters plus authority[1]. Following abbreviation is allowed: "sp."
6. Subtaxa (SUBTAXA) Subtaxa can be used to store any additional taxonomic identifier plus authority[1]. Following abbreviations are allowed: "ssp." (for subspecies); "var." (for variety); "convar." (for convariety); "f." (for form).
7. Accession name (ACCNAME) Either a registered or other formal designation given to the accession. First letter uppercase. Multiple names separated with semicolon.
8. Country of origin (ORIGCTY) Name of the country in which the sample was originally collected or derived. Use the ISO 3166 extended codes, (i.e. current and old 3 letter ISO 3166 country codes)
9. Location of collecting site (COLLSITE) Location information below the country level that describes where the accession was collected starting with the most detailed information. Might include the distance in kilometers and direction from the nearest town, village or map grid reference point, (e.g. CURITIBA 7S, PARANA means 7 km south of Curitiba in the state of Parana)
10. Latitude of collecting site (LATITUDE) Degrees and minutes followed by N (North) or S (South) (e.g. 1030S). Missing data (minutes) should be indicated with hyphen (e.g. 10—S).

[1] Authority is only provided at the most detailed taxonomic level

11. Longitude of collecting site (LONGITUDE)

Degrees and minutes followed by E (East) or W (West) (e.g. 07625W). Missing data (minutes) should be indicated with hyphen (e.g. 076—W).

12. Elevation of collecting site [mas l] (ELEVATION)

Elevation of collecting site expressed in meters above sea level. Negative values allowed.

13. Collecting date of original sample [YYYYMMDD] (COLLDATE)

Collecting date of the original sample where YYYY is the year, MM is the month and DD is the day.

14. Status of sample (SAMPSTAT)

1	Wild	0	Unknown
2	Weedy		
3	Traditional cultivar/Landrace	99	Other (Elaborate in REMARKS field)
4	Breeder's line		
5	Advanced cultivar		

15. Collecting source (COLLSRC)

The coding scheme proposed can be used at 2 different levels of detail: Either by using the global codes such as 1, 2, 3, 4 or by using the more detailed coding such as 1.1, 1.2, 1.3 etc.

1	Wild habitat	2	Farm	3	Market	4	Institute/ Research organization
1.1	Forest/ woodland	2.1	Field	3.1	Town		
		2.2	Orchard	3.2	Village		
1.2	Shrubland	2.3	Garden	3.3	Urban	0	Unknown
1.3	Grassland	2.4	Fallow	3.4	Other exchange system		
1.4	Desert/ tundra	2.5	Pasture			99	Other (Elaborate in REMARKS field)
		2.6	Store				

16. Donor institute code (DONORCODE)

Code for the donor institute. The codes consist of the 3-letter ISO 3166 country code of the country where the institute is located plus number or an acronym as specified in the Institute database that will be made available by FAO. Preliminary codes (i.e. codes not yet incorporated in the FAO Institute database) start with an asterisk followed by a 3-letter ISO 3166 country code and an acronym.

17. Donor number (DONORNUMB)

Number assigned to an accession by the donor. 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)

18. Other number(s) associated with the accession (OTHERNUMB)

Any other identification number known to exist in other collections for this accession. 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). Multiple numbers can be added and should be separated with a semicolon

19. Remarks (REMARKS)

The remarks field is used to add notes or to elaborate on descriptors with value "99" (=Other). Prefix remarks with the field name they refer to and a colon (e.g. COLLSRC: roadside). Separate remarks referring to different fields are separated by semicolons.

FAO WIEWS DESCRIPTORS	
1. Location of safety duplicates	(DUPLSITE)
Code of the institute where a safety duplicate of the accession is maintained. The codes consist of 3-letter ISO 3166 country code of the country where the institute is located plus number or an acronym as specified in the Institute database that will be made available by FAO. Preliminary codes (i.e. codes not yet incorporated in the FAO Institute database) start with an asterisk followed by a 3-letter ISO 3166 country code and an acronym. Multiple numbers can be added and should be separated with a semicolon.	
2. Availability add. Passport data	(PASSAVAIL)
(i.e. in addition to what has been provided)	
0 Not available	
1 Available	
3. Availability of characterization data	(CHARAVAIL)
0 Not available	
1 Available	
4. Availability of evaluation data	(EVALAVAIL)
0 Not available	
1 Available	
5. Acquisition type of the accession	(ACQTYPE)
1 Collected/bred originally by the institute	
2 Collected/bred originally by joint mission/institution	
3 Received as a secondary repository	
6. Type of storage	(STORTYPE)
Maintenance type of germplasm. If germplasm is maintained under different types of storage, multiple choices are allowed, separated by a semicolon (e.g. 2;3). (Refer to FAO/IPGRI Genebank Standards 1994 for details on storage type)	
1 Short-term	99 Other (elaborate in REMARKS field)
2 Medium-term	
3 Long-term	
4 *In vitro* collection	
5 Field genebank collection	
6 Cryopreserved	

Please forward your feedback on the use of this list to:

Tom Hazekamp, Germplasm Documentation Officer
International Plant Genetic Resources Institute
Via delle Sette Chiese 142
00145 Rome, Italy
Email: T.HAZEKAMP@CGNET.COM
Fax: (+39-6) 5750309

STATUS OF SAMPLE (2.14)
0. Unknown 1. Wild 2. Weedy 3. Traditional cultivar/Landrace 4. Breeders line
5. Advanced cultivar 99. Other (specify):

USES OF THE ACCESSION (2.16)
1. Nut production 2. Clonal rootstock 3. Seedling rootstock 4. Pollinator 5. Medicinal
6. Forage 7. Wood/timber 99. Other (specify):

PREVAILING STRESSES (2.25):
Mention the types of major stresses, i.e. abiotic (drought), biotic (insects, fungi, etc.)

COLLECTING SITE LOCATION

COUNTRY. (2.5): |__|__|__|__|__|__|__|__| REGION: |__|__|__|

PROVINCE/STATE (2.6): DEPARTMENT/COUNTY (2.7):

LOCATION (2.8) km: |__|__| direction: |__|__|__| from:

LATITUDE (2.9): |_|_|_|_|_|_| LONGITUDE (2.10): |_|_|_|_|_|_|
ELEVATION (2.11): |_|_|_|_| m asl

ACCESSION AND COLLECTING SITE ENVIRONNEMENT

COLLECTING SOURCE (2.12):
0. Unknown
1. Wild habitat
2. Farm
3. Market
4. Institute/Research organization
99. Other (specify):

HIGHER LEVEL LANDFORM (5.1.2) 1. Plain 2. Basin 3. Valley 4. Plateau 5. Upland
6. Hill 7. Mountain

SLOPE [°](5.1.4): SOIL FERTILITY (5.1.20): |__| (code: 3=Low ; 5=Moderate ; 7=High)

SOIL TEXTURE CLASSES (5.1.17)
State class (e.g. Clay, Loam, Silt)

SOIL TAXONOMIC CLASSIFICATION (5.1.18)
State class (e.g. Alfisols, Spodosols, Vertisols)

WATER AVAILABILITY (5.1.19)
1. Rainfed 2. Irrigated 3. Flooded 4. River banks 5. Sea coast 99. Other (specify):

RAINFALL (5.1.21.2) Annual mean: |_____| mm

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Seasonal mean (mm):	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|

TEMPERATURE (5.1.21.1) Annual mean: |_____| °C

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Seasonal mean (°C):	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|

COLLECTING FORM for pistachio (*Pistacia vera* L.)

ACCESSION No. (1.1):

COLLECTOR NAME(S)/INSTITUTE(S) (2.1):

ACCESSION IDENTIFICATION

COLLECTING No. (2.3): |__|__|__|__|__|__|__|__|
PHOTOGRAPH No. (2.21): |__|__|__|__|__|__|__|__|

COLLECTING DATE (YYYY/MM/DD) (2.4): |__|__| |__|__| |__|__|__|__|

GENUS (1.8.1): SPECIES (1.8.3):

SEX (1.11):
1. Male 2. Female

LOCAL/VERNACULAR NAME (2.18):

ETHNIC GROUP (2.17):

LOCAL LANGUAGE:

ORCHARD MANAGEMENT

ACCESSION NUMBER (3.1)

TYPE OF MAINTENANCE (3.10)
1 Vegetative in the field
2 Vegetative in tissue culture
3 Pollen
4 Seed
99 Other (specify):

CHARACTERIZATION

LEAF DESCRIPTORS (6.2)
Terminal leaflet length [cm] (6.2.4):
Terminal leaflet width [cm] (6.2.5):

INFLORESCENCE AND FRUITING HABIT (6.3)
Female reference standard (6.3.1):
Male reference standard (6.3.2):
Flowering precocity (6.3.3):

NUT AND KERNEL (6.4)
Nut length [mm] (6.4.6):
Nut width [mm] (6.4.7):
Nut thickness (6.4.8):
Nut shape (6.4.9):
Shell apex (6.4.10):
Suture opening (6.4.20):
Blank production [%] (6.4.22):
Kernel colour (6.4.31):
Testa colour (6.4.32):
Estimated yield (7.2.2):

SAMPLE

TYPE OF SAMPLE (2.13):
1. Vegetative 2. Seed 3. Pollen 4. Tissue culture

ISBN 92-9043-332-9