



TROPICAL FRUIT DESCRIPTOR



Cover illustrations.:

original drawings by *R. Surahso Nurbiantoro*,
redrawn by M. *Bonomi*

top (left to right)

Artocarpus heterophyllus, *Durio zibethinus*

bottom (left to right)

Lansium domesticum, *Mangifera indica*,
Nephelium lappaceum

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INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES
SOUTHEAST ASIA REGIONAL COMMITTEE

Working Group to review the Tropical Fruit Descriptors
and strategy for collection, evaluation, utilization
and conservation

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IBPGR SECRETARIAT
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The International Board for Plant Genetic Resources (IBPGR) is an autonomous, international, scientific organization under the aegis of the Consultative Group on International Agricultural Research (CGIAR). The IBPGR, which was established by the CGIAR in 1974, is composed of 15 members from 13 countries; its Executive Secretariat is provided by the Food and Agriculture Organization of the United Nations. The basic function of the IBPGR, as defined by the Consultative Group, is to promote an international network of genetic resources centres to further the collection, conservation, documentation, evaluation and use of plant germplasm and thereby contribute to raising the standard of living and welfare of people throughout the world. The Consultative Group mobilizes financial support from its members to meet the budgetary requirements of the Board.

IBPGR Secretariat
Plant Production and Protection Division
Food and Agriculture Organization of the United Nations
Via delle Terme di Caracalla, 00100 Rome, Italy

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PREFACE

The IBPGR has supported a cooperative regional programme in Southeast Asia since 1977. This programme is guided by a Committee with representatives from Indonesia, Malaysia, Papua New Guinea, the Philippines and Thailand. Dr. Setijati Sastrapradja of Indonesia, founding Chairwoman of this Regional Committee, resigned in 1979 and Dr. Narong Chomchalow of Thailand, a present member of the IBPGR, took over as Chairman.

The Regional Committee has identified a list of crops for priority action in the region. This list includes a number of tropical fruits (MANGO, DURIAN, RAMBUTAN, *Lansium* and JACKFRUIT). A Working Group, convened by the IBPGR, met in Bali, Indonesia in 1978 to discuss the tropical fruit descriptors and a minimum list of descriptors was agreed and published (AGP:IBPGR/ 79/ 6).

One of the recommendations of the above meeting was to convene a technical meeting to review: (a) the collection of fruit tree germplasm, including sampling strategy; (b) the evaluation and utilization of the germplasm and (c) methods of conservation. The Working Group met in July 1980 and this report provides the revised descriptor list and the sampling strategy.

The IBPGR recognizes the importance of the suggestions of the Working Group especially with regard to sampling strategy and procedures, evaluation, utilization and conservation. For a more detailed treatment of the meeting please consult the report of the Third Southeast Asia Regional Committee Meeting (AGP:IBPGR/80/53, Appendix IV). The IBPGR recommends the use of both sampling strategy (see Appendix) and the revised list of descriptors. Any suggestions for modification would be welcomed by the IBPGR Secretariat.

REVISED DESCRIPTOR LIST FOR TROPICAL FRUITS

The IBPGR now uses the following definitions in genetic resources documentation.

- (i) **passport data** (accession identifiers and information recorded by collectors);
- (ii) **characterization** (consists of recording those characters which are highly heritable, can be easily seen by the eye and are expressed in all environments);
- (iii) **preliminary evaluation** (consists of recording a limited number of additional traits thought desirable by a consensus of users of the particular crop).

Characterization and preliminary evaluation will be the responsibility of the curators, while further evaluation should be fed back to the curator who will maintain a data file.

Many descriptors which are continuously variable are recorded on a 1-9 scale. 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. Skin thickness (4.7) could also be recorded as 1 Very thin or 4 Thin-to-medium.

PASSPORT DATA

1. ACCESSION DATA

1.1 ACCESSION NUMBER

This number serves as a unique identifier for accessions and is assigned by the curator when an accession is entered into his collection. Once assigned, this number should never be reassigned to another accession in the collection. Even when an accession is lost, its assigned number is still not available for re-use. Letters occur before the number to identify the genebank.

1.2 SCIENTIFIC NAME

1.2.1 Genus

1.2.2 Species

1.2.3 Subspecies

1.3 DONOR NAME

Name of donor if different from collector name (2.1)

1.4 DONOR ACCESSION NUMBER

Number of donor if different from collection number (2.2)

1.5 ANY OTHER NAMES OR NUMBERS ASSOCIATED WITH THE ACCESSION

e.g. USDA Plant Introduction number, common name etc.
(Not collection number, see 2.2)

2. COLLECTION DATA

2.1 COLLECTING INSTITUTE

Institute or person collecting the original sample

2.2 ORIGINAL NUMBER ASSIGNED BY COLLECTOR OF THE SAMPLE

2.3 DATE OF COLLECTION OF ORIGINAL SAMPLE

Expressed as day/month/year, e.g. 20 November 1980 as 201180

2.4 COUNTRY OF COLLECTION

Use the three letter abbreviations supported by the Statistical Office of the United Nations. Copies of these abbreviations are available from the IBPGR Secretariat

2.5 LATITUDE OF COLLECTION SITE

Degrees and minutes suffixed by N or S, e.g. 0525 N

2.6 LONGITUDE OF COLLECTION SITE

Degrees and minutes suffixed by E or W, e.g. 9610 E

2.7 LOCATION OF COLLECTION SITE

Number of kilometres and direction from nearest town, village or map reference point

2.8 ALTITUDE OF COLLECTION SITE

Elevation above sea level, in metres

2.9 MATERIAL COLLECTED

The original form of the collection

- 1 Seed
- 2 Seedling
- 3 Scion wood
- 4 Cuttings
- 5 Root cuttings

2.1.0 SAMPLING METHOD USED

- 1 Random
- 2 Biased
- 3 Representative

2.11 TYPE OF SAMPLE

- 1 Single plant
- 2 Clone
- 3 Population

2.12 STATUS OF SAMPLE

- 1 Wild
- 2 Primitive
- 3 Improved

2.13 COLLECTION SOURCE

- 1 Forest
- 2 Home garden
- 3 Orchard
- 4 Institute
- 5 Market

2.14 DISTRIBUTION

The general distribution of the species in the areas of collection

- 1 Limited
- 2 Widely distributed

2.15 ENDANGERED

An estimate whether this species is being endangered in the areas of collection

- 0 No
- + Yes

CHARACTERIZATION AND PRELIMINARY EVALUATION

3. GENERAL

3.1 SITE OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 YEAR OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.3 EVALUATOR(S) NAME AND ADDRESS

4. CHARACTERIZATION

4.1 GROWTH HABIT

The general habit of the tree at maturity

- 1 Upright
- 2 Spreading
- 3 Other (specify)

4.2 DWARFNESS

- 0 No
- + Yes

4.3 LEAF SHAPE

The leaf shape of mature trees (provide illustration)

- 1 Ovate
- 2 Lanceolate
- 3 Oblanceolate
- 4 Spatulate
- 5 Deltoid
- 6 Obovate
- 7 Elliptic
- 8 Oblong

4.4 FRUIT SIZE

Based on average of 10 mature fruits

- 3 Small
- 5 Medium
- 7 Large

4.5 FRUIT SHAPE

The shape of the fruit at maturity (provide illustration)

- 1 Ovate
- 2 Cordate
- 3 Oblong
- 4 Ovoid
- 5 Pyriform
- 6 Obovate
- 7 Reniform

4.6 SKIN COLOUR

Colour of the mature skin. Use of the colour chart of the Royal Horticultural Society is recommended

4.7 SKIN THICKNESS

- 3 Thin
- 5 Medium
- 7 Thick

4.8 FLESH THICKNESS

- 3 Thin
- 5 Medium
- 7 Thick

4.9 FLESH COLOUR

The flesh colour of mature fruit. Use of the colour chart of the Royal Horticultural Society is recommended

4.10 TASTE

The taste of mature flesh

- 0 Bland
- 1 Bitter
- 2 Sour
- 3 Sub-acid
- 4 Bitter-sweet
- 5 Nutty
- 6 Sweet
- 7 Astringent
- 8 Other (specify)

4.11 FLESH AROMA

The aroma of mature flesh

- 0 None
- 3 Mild
- 7 Strong

4.12 FLESH TEXTURE

The texture of the mature fruit flesh

- 1 Smooth
- 2 Crisp
- 3 Coarse
- 4 Fibrous

4.13 FRUIT SOFTNESS

- 3 Hard
- 7 Soft

4.14 FRUIT JUICINESS

- 3 Dry
- 5 Juicy
- 7 Very juicy

4.15 SEED SIZE

Based on average of ten seeds

- 3 Small
- 5 Medium
- 7 Large

4.16 SEED SHAPE (provide illustration)

- 1 Ovate
- 2 Ovoid
- 3 Oblong
- 4 Obovate
- 5 Reniform

5. PRELIMINARY EVALUATION

5.1 GROWTH AND VIGOUR

Ability to produce vegetative growth

- 3 Weak
- 5 Medium
- 7 Strong

5.2 YEAR TO FIRST FLOWERING

5.3 FLOWERING

Ability to produce flowers

- 3 Sparse
- 5 Medium
- 7 Profuse

5.4 FRUIT SETTING

Ability to set fruit when pollen is available

- 3 Light
- 5 Medium
- 7 Heavy

5.5 BEARING

- 3 Light
- 5 Medium
- 7 Heavy

5.6 SEASONALITY

- 1 Annual
- 2 Biannual
- 3 Erratic

5.7 FRUITING SEASON

- 1 Early
- 2 Mid-season
- 3 Late
- 4 Extended
- 5 Ever-bearing

5.8 TOTAL SOLUBLE SOLIDS

Expressed as percentage of fresh weight of mature fruit flesh

FURTHER EVALUATION

6. REACTION TO PESTS AND DISEASES

Expressed on a 1-9 scale. A separate descriptor is needed for each disease and pest

- 1 Very resistant
- 3 Resistant
- 5 Intermediate
- 7 Susceptible
- 9 Very susceptible

7. REACTION TO ENVIRONMENTAL STRESS

Expressed on a 1-9 scale. A separate descriptor is needed for each type of stress

- 1 Very hardy
- 3 Hardy
- 5 Intermediate
- 7 Nonhardy
- 9 Very nonhardy

APPENDIX

SAMPLING STRATEGY AND PROCEDURES

1 Wild related species

Sampling procedure

- | | | |
|-----|----------------------------------|-------------------|
| 1.1 | Representative collection | no bias (=random) |
| 1.2 | Collection for parental material | no bias? |
| 1.3 | Collection for direct use | bias |

Sample size: should not be less than three trees from one community in any one species

Collected material: preferably scion-/budwood, but collecting seed is permissible

2 Cultivated species

- ## 2.1 Primitive material

(Breeding material for seedling selection and/or crossbreeding)

- 2.1.1 Seedling (ex home gardens) bias
- 2.1.2 Clones (ex orchards) complete representation 1/

- 2.2 Improved cultivars complete representation 1/

Collected material: One sample providing sufficient scion budwood to establish three trees in the collection

1/ 2.1.2 and 2.2 to be maintained permanently. Suggested regional agreement on the responsibility for maintenance whether in one or several countries, possibly with one country assuming coordinating responsibility