Key access and utilization descriptors for breadfruit genetic resources

This list consists of an initial set of characterization and evaluation descriptors for breadfruit utilization. These, together with passport data, will form the basis of the global accession level information system being developed by the Bioversity-led project, Global Information on Germplasm Accessions (GIGA). It will facilitate access to and utilization of breadfruit accessions held in genebanks. Additional descriptors may be added later if information becomes available.

This list is based on Ragone (1997)[1] with additional descriptors drawn from work at the National Tropical Botanical Garden (NTBG), Hawaii, USA. The data was subsequently integrated with evaluation traits, such as yield, fruit quality and reaction to important pests and diseases, as suggested in the Breadfruit Conservation Strategy published by the Global Crop Diversity Trust in 2007. The list was harmonized, wherever possible, with descriptors developed by the United States Department of Agriculture, Agricultural Research Service (USDA, ARS), the National Genetic Resources Program (NGRP) and the Germplasm Resources Information Network (GRIN).

Biotic and abiotic stresses included in the list were chosen because of their cosmopolitan nature, wide geographic occurrence and global economic impact.

The key set of access and utilization descriptors was defined in consultation with a Core Advisory Group (see 'Contributors') led by Dr Diane Ragone from the NTBG, and is listed below with the descriptor states.

Fruit weight [kg]

Record the average weight of at least three fruits

Fruit shape

Observe three fruits at least, and record which shape best describes them

1 Spherical
2 Broad ovoid
3 Oval
4 Oblong
5 Ellipsoid
6 Heart-shaped
7 Irregular

1 Ragone D. 1997. Breadfruit. *Artocarpus altilis* (Parkinson) Fosberg. Promoting the conservation and use of underutilized and neglected crops 10. IPK and IPGRI.

Fruit skin texture

1 Smooth
2 Irregularly raised, flattened sections
3 Sandpapery
4 Pebbly
5 Spiky with hard raised centre point
6 Spiny with pointed, flexible tip

Fruit flesh colour

1 White
2 Cream
3 Light yellow
4 Yellow
5 Dark yellow

Leaf lobe number

Observe five leaves and record the average number of lobes

Degree of leaf dissection

Observe five leaves and record the predominant degree of dissection

1 Leaf entire (no dissection)
2 Leaf slightly dissected on upper half
3 Leaf moderately dissected on upper half
4 Entire leaf moderately deeply dissected
5 Leaf deeply dissected
6 Leaf deeply dissected with wide spaces between lobes

Leaf surface texture

Observe five leaves and record the texture that best describes them

1 Glossy
2 Dull

Seed number

Record the average seed number of three fruits

Male flower length [cm]

Record the average of five male inflorescences

Male flower width [cm]
Record the average of five male inflorescences

Fruiting time/time of maturity
Indicate which category listed below best describes maturation time, and record the actual month when mature fruits are on the tree and harvestable

3 Early
5 Medium
7 Late

Month [MM]

Nutritional components
Indicate the most significant component

1 Vitamin
2 Potassium
3 Iron
4 Carbohydrate
5 Carotenoid content
99 Other (specify in the **Notes** descriptor)

Fruit yield
Record the actual count of fruits on tree and/or harvested. If resources are not available, the following codes could be used

3 Low
5 Medium
7 High

Biotic stress susceptibility
Fruit rot (*Phytophthora* sp.)
Anthracnose (*Colletotrichum* sp.)
Soft rot (*Rhizopus* sp.)
Trunk rot (*Phellinus noxius*)
Mealybug (*Icerya aegyptiaca*)

Abiotic stress susceptibility
Salinity
Drought

Notes
Specify here any additional information particularly that referring to the category '99=Other' present in some of the descriptors above.

Contributors
Bioversity is grateful to all the scientists and researchers who contributed to the definition of this strategic set of Descriptors for Breadfruit, particularly to Dr D. Ragone who provided scientific direction. Adriana Alercia provided technical expertise and guided the entire production process.

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