Key access and utilization descriptors for finger millet genetic resources

This list consists of an initial set of characterization and evaluation descriptors for finger millet genetic resources utilization. This strategic set of descriptors, together with passport data, will become the basis for the global accession level information portal being developed by Bioversity International with the financial support of the Global Crop Diversity Trust (GCDT). It will facilitate access to and utilization of finger millet accessions held in genebanks and does not preclude the addition of further descriptors, should data subsequently become available.

Based on the comprehensive list 'Descriptors for Finger millet' published by IBPGR (now Bioversity International) in 1985, the list was subsequently compared with a number of sources such as 'Descriptors for GRASS-WARMSEASON' (USDA, ARS, GRIN), 'Morphological diversity in finger millet germplasm introduced from Southern and Eastern Africa' (SAT eJournal, ICRISAT, Vol. 3, Issue 1, December 2007), 'Descriptors for Characterization and Evaluation of Finger millet (National Institute of Agrobiological Sciences, Genebank of Japan), 'Phenotypic Diversity of Ethiopian Finger Millet [*Eleusine coracana* (L.) Gaertn] in Relation to Geographical Regions as an Aid to Germplasm Collection and Conservation Strategy' (Kasetsart Journal, Natural Science, 41: 7 - 16, 2007). The initial list was further refined during a crop-specific consultation meeting held at the National Bureau of Plant Genetic Resources (NBPGR, India) in June 2009. It involved several scientists from NBPGR, the Indian Agricultural Research Institute (IARI) and All India Coordinated Research Project on Small Millets (AICRP-Small Millets).

A worldwide distribution of experts was involved in an online survey to define a first priority set of descriptors to describe, to access and to utilize finger millet genetic resources. This key set was afterwards validated by a Core Advisory Group (see 'Contributors') led by Dr A. Seetharam, Ex-Project Coordinator, All India Coordinated Research Project on Small Millets.

Biotic stresses included in the list were chosen because of their wide geographic occurrence and significant economic impact at a global level.

Numbers in parentheses on the right-hand side are the corresponding descriptor numbers listed in the 1985 publication.

PLANT DATA

Plant height [cm] (4.1.2)
From ground level to the tip of inflorescence (ear). At dough stage

Plant pigmentation (4.1.4)
At flowering

0 Not pigmented
1 Pigmented

Productive tillers (4.2.1)
Number of basal tillers which bear mature ears

Days to flowering (4.2.2)
From sowing to stage when ears have emerged from 50% of main tillers

Ear shape (4.2.4)
At dough stage
- 1 Droopy (fingers lax and drooping)
- 2 Open (fingers straight)
- 3 Semi-compact (tops of fingers curved)
- 4 Compact (fingers incurved)
- 5 Fist-like (fingers very incurved)

Finger branching (4.2.6)
At dough stage
- 0 Absent
- 1 Present

Finger length [mm] (4.2.8)
From base to the tip of longest spike (finger) on main tiller. At dough stage

Number of grains per spikelet (4.2.12)
At maturity
- 3 Low (4 grains)
- 5 Intermediate (6 grains)
- 7 High (8 grains)

Grain colour (4.3.1)
Post-harvest
- 1 White
- 2 Light brown
- 3 Copper-brown
- 4 Purple-brown
- 99 Other (specify in descriptor **Notes**)

Green fodder yield (6.1.11)
Consider tillering, height, leafiness, bulk and senescence. At maturity

Finger number (6.2.2)
On main ear. At dough stage

Days to maturity (6.2.4)
From sowing to stage when 50% of main tillers have mature ears

1000-grain weight [g] (6.3.5)

Grain yield per plant [g] (6.3.6)
Mean of five plants, post-harvest

Grain protein content [DW %] (6.3.9)
Percentage of dry grain weight

Calcium content [DW %] (6.3.13)
Percentage of dry grain weight

BIOTIC STRESSES

Stem borers (*Busseola* spp.; *Chilo* spp.; *Sesamia* spp.) (8.1.6)

Blast on foliage (*Pyricularia* sp.) (8.2.1)
At 30 days

Blast on neck (*Pyricularia* sp.) (8.2.2)
At maturity

Blast on finger (*Pyricularia* sp.) (8.2.3)
At maturity

NOTES
Any additional information may be specified here, 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 have contributed to the development of this strategic set of 'Key access and utilization descriptors for finger millet genetic resources', and in particular to Dr A. Seetharam for providing valuable scientific direction. Adriana Alercia provided technical expertise and guided the entire production process.

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