# Key access and utilization descriptors for pigeonpea genetic resources

This list consists of an initial set of characterization and evaluation descriptors for pigeonpea [*Cajanus cajan* (L.) Millsp.] 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 pigeonpea 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 Pigeonpea [*Cajanus cajan* (L.) Millsp.]' published by ICRISAT and IBPGR (now Bioversity International) in 1993, the list builds on the results of the Global Public Goods Activity 4.2.1.1 and was subsequently compared and harmonized with a number of sources such as 'Descriptors for PIGEON-PEA' (USDA, ARS, GRIN) as well as 'Development of a Strategy for the Global Conservation of Pigeonpea Genetic Resources' (GCDT, 2006). It was further refined during a meeting held at the National Bureau of Plant Genetic Resources (NBPGR, India) in June 2009 that involved several scientists from NBPGR and the Indian Agricultural Research Institute (IARI).

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 pigeonpea genetic resources. Survey results were afterwards analyzed and validated by a Core Advisory Group (see 'Contributors') led by Dr Hari D. Upadhyaya of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Dr Ram Prakash Dua of the Indian Council of Agricultural Research (ICAR).

Biotic and abiotic 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 1993 publication. Descriptors with numbers ending in 'letters' are either modified or are new descriptors that were added during the development of the list below.

## PLANT DATA

**Growth habit** (4.1.1)

1 Erect and compact
2 Semi-spreading
3 Spreading
4 Trailing

**Plant height** [cm] (4.1.2)
At maturity

**Number of primary branches** (4.1.4.1)
Number of primary branches per plant

**Number of secondary branches** (4.1.4.2)
Number of secondary branches per plant

**Days to 50% flowering** (4.2.1)
From sowing or first irrigation/rainfall until 50% of plants flower

**Days to 75% maturity** (4.2.4)
From sowing or first irrigation/rainfall to 75% maturity

**Flowering pattern** (4.2.8)
1 Determinate
2 Semi-determinate
3 Indeterminate

**Seeds per pod** (4.2.10)
Average number of seeds of 10 randomly selected pods from three randomly selected plants in a row

**Pod bearing length** [cm] (4.2.14)
Distance between lowest and topmost pod on the plant

**Pod number** (4.2.a)
Number of pods per plant. Recorded at maturity

**Pod length** [cm] (4.2.b)
Maximum average length of 10 randomly selected mature pods. Recorded at physiological maturity

**Seed colour pattern** (4.3.1)
1 Plain
2 Mottled
3 Speckled
4 Mottled and speckled
5 Ringed

**Seed base colour** (4.3.2)
Royal Horticultural Society (RHS) colour codes are given in parentheses beside descriptor states
1 White (yellow-white group 158C)
2 Cream (greyed-white group 156C)
3 Orange (greyed-orange group 163B)
4 Light brown (yellow-orange group 22C)
5 Reddish-brown (reddish-brown group 200D)
6 Light grey (grey-brown group 199B)
7 Grey (greyed-green group 197A)
8 Purple (greyed-purple group 187A)
9 Dark purple (black group 202A)
10 Dark grey (black group 202B)

**100-seed weight** [g] (4.3.8)
Weight of air dried (10% moisture) seeds estimated from a random sample taken from total row yield

**Seed yield per plant** [g] (6.1)
Average seed yield of three randomly selected plants

**Harvest index** (6.1.1)
Ratio of total seed yield and total biological yield taken from three randomly selected plants in a row

**Shelling percentage** [%] (6.1.2)
Calculated from seed-pod ratio of three randomly selected plants in a row

**Seed protein content** [%] (6.2.1)
Whole seed crude protein percentage based on dry weight using the dye-binding method or automatic protein analyzer

## ABIOTIC STRESSES

**Reaction to drought** (7.3)

**Reaction to excess soil moisture** (7.4)

**Reaction to soil salinity** (7.5)

**Reaction to water logging** (7.c)

## BIOTIC STRESSES

**Legume pod borer** (*Helicoverpa armigera*; *Etiella zinckenella*; *Maruca testulalis*) (8.1.6)

**Pod fly** (*Melanagromyza obtusa*) (8.1.8)

**Bruchids** (*Callosobruchus chinensis*) (8.1.10)

**Phytophthora blight** (*Phytophthora drechsleri* f.sp. *cajani*) (8.2.1)

**Fusarium wilt** (*Fusarium oxysporum* f.sp. *udum*) (8.2.7)

**Sterility mosaic virus** (SMV) (8.4.1)

# CONTRIBUTORS

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