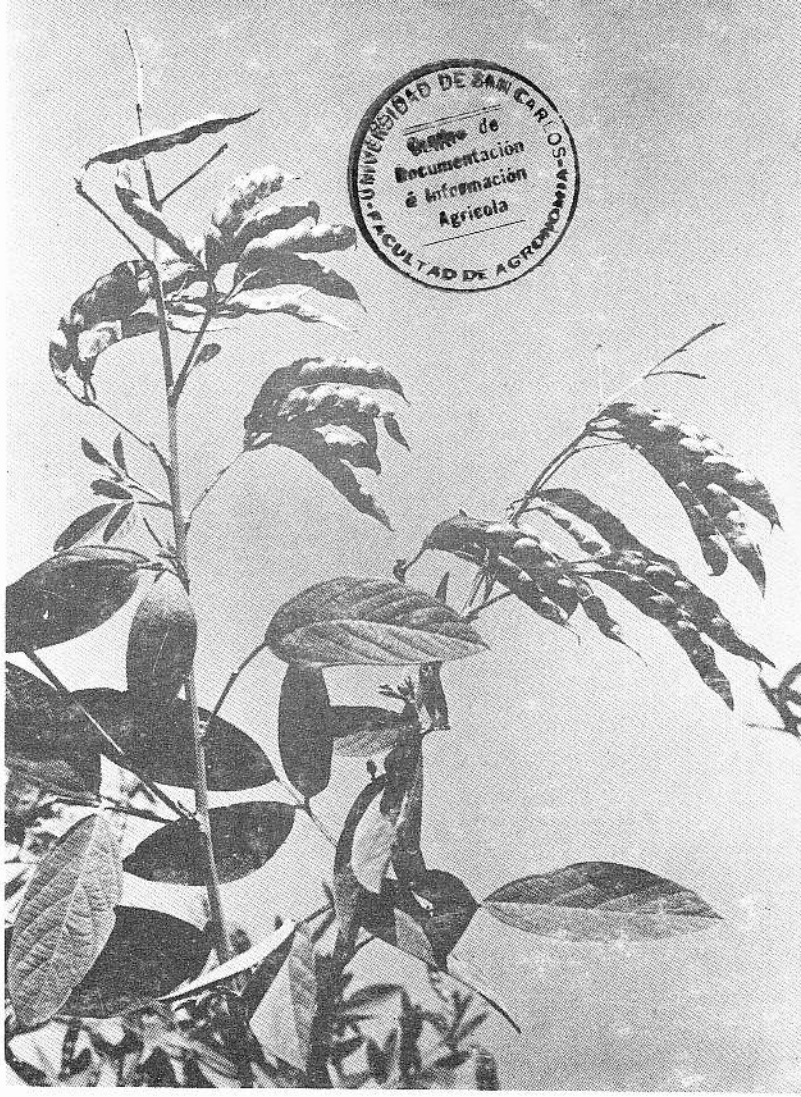

DESCRIPTORS for PIGEONPEA

AGP:IBPGR/80/74
September 1981

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES
(IBPGR)

and

INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS
(ICRISAT)

Descriptors for Pigeonpea

IBPGR Secretariat
Rome, 1981

The International Board for Plant Genetic Resources (IBPGR) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) are autonomous, international, scientific organizations under the aegis of the Consultative Group on International Agricultural Research (CGIAR).

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 objectives of ICRISAT are to develop improved farming practices and better varieties of major food crops in order to improve the welfare of the poorest population of the semi-arid tropics, estimated to number about 500 million. ICRISAT reaches the target groups through cooperation with national programmes that are, at present, predominantly in India, but which, increasingly, are elsewhere in the semi-arid tropics.

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CONTENTS

PREFACE

The pigeonpea descriptor list was finalized at an International Workshop on Pigeonpeas, held 15–19 December 1980 at ICRISAT, Patancheru, Hyderabad, India. A list of participants is given in the Appendix. A draft list for discussion had been prepared by the IBPGR Secretariat and the Genetic Resources Unit, ICRISAT, based on the work of L.J.G. van der Maesen, N. Murthi Anishetty and P. Remanandan.

Yield and height data should be expressed relative to nearby check cultivars to take heterogeneity of soils into account.

Because of the outcrossing nature of pigeonpea the charateristics of an accession may change over the years if it is not properly maintained.

IBPGR and ICRISAT endorse this list and recommend it for documentation and exchange purposes. The suggested coding, although representing a consensus of experts, should not be regarded as the only definitive scheme. Any suggestions for modifications will be welcomed.

DESCRIPTOR LIST FOR PIGEONPEA

The following definitions are now used 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 genetic resources scientists, while further evaluation should be carried out by concerned crop improvement scientists. The data from further evaluation should be fed back to the genebank which 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 using values between them, e.g. Eye size (4.6.5) could also be coded as:

4 Narrow-to-medium

or

9 Extremely wide

PASSPORT DATA

1. ACCESSION DATA

1.1 ACCESSION NUMBER

This number serves as a unique identifier for accessions and is assigned by the genebank when an accession is entered into the 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. In ICRISAT numbers are preceded by the letters ICP.

1.2 SCIENTIFIC NAME

1.2.1 Genus

1.2.2 Species

1.2.3 Subspecies

1.3 YEAR OF LAST MULTIPLICATION OR REGENERATION

1.4 REGENERATION STATUS

Number of times the accession has been regenerated since the original collection

1.5 DONOR NAME

Name of the person or institution responsible for donating the germplasm to the collection

1.6 DONOR NUMBER

Accession number or name assigned by the donor

1.7 ANY OTHER NAMES OR NUMBERS ASSOCIATED WITH THE ACCESSION

E.g. NBPGR (India) EC number, common name, pedigree, etc. (not collection number, see 2.2)

2. COLLECTION DATA

Data to be recorded when collections are made in the field

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. 5 February 1981 as 050281

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 PROVINCE/STATE

Name of the largest administrative sub-division of the country

2.6 LATITUDE OF COLLECTION SITE

Degrees and minutes followed by N or S, e.g. 1030 S

2.7 LONGITUDE OF COLLECTION SITE

Degrees and minutes followed by E or W, e.g. 7625 W

2.8 LOCATION OF COLLECTION SITE

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

2.9 ALTITUDE OF COLLECTION SITE

Elevation above sea level, in metres

2.10 COLLECTION SOURCE

1 Wild
2 Farm land
3 Farm storage
4 Garden
5 Market
6 Research institute
7 Other (specify)

2.11 STATUS OF SAMPLE

1 Wild
2 Weedy
3 Primitive cultivar
4 Advanced cultivar
5 Breeder's line

2.12 OTHER NOTES FROM COLLECTOR

Some collectors will record ecological and soil information, whether a cultivated crop was irrigated, season of sowing, topography of land, associated crops or wild plants, etc.

CHARACTERIZATION AND PRELIMINARY EVALUATION

3. GENERAL

3.1 SITE OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 EVALUATOR(S) NAME AND ADDRESS

3.3 PLANTING DATE

Expressed as day/month/year, e.g. 10 March 1981 as 100381

3.4 HARVESTING DATE

Expressed as day/month/year, e.g. 9 September 1981 as 090981

4. CHARACTERIZATION

4.1 GROWTH HABIT

1 Erect and compact
5 Semi-spreading
7 Spreading
9 Trailing

4.2 STEM COLOUR

1 Green
2 Sun red
3 Purple

4.3 FLOWER

4.3.1 Flower main colour

Main colour of the petals, Royal Horticultural Society Colour Chart numbers in parenthesis

1 Ivory (Green white 157 B)
2 Light yellow (Yellow 6 D)
3 Yellow (Yellow 9 B)
4 Orange (Orange 25 B)
5 Red (Red 53 A)
6 Purple (Red purple 59 A)

4.3.2 Second flower colour

Colour of streaks on dorsal side of the vexillum (flag) and second colour of the wings and keel

0 No second flower colour
1 Red
2 Purple

4.3.3 Pattern of streaks

Pattern of second colour on the dorsal side of the flag (vexillum, standard). See Figure 1

0	No pigmented streaks
3	Few streaks
5	Medium amount of streaks
7	Dense streaks
9	Uniform coverage of second colour

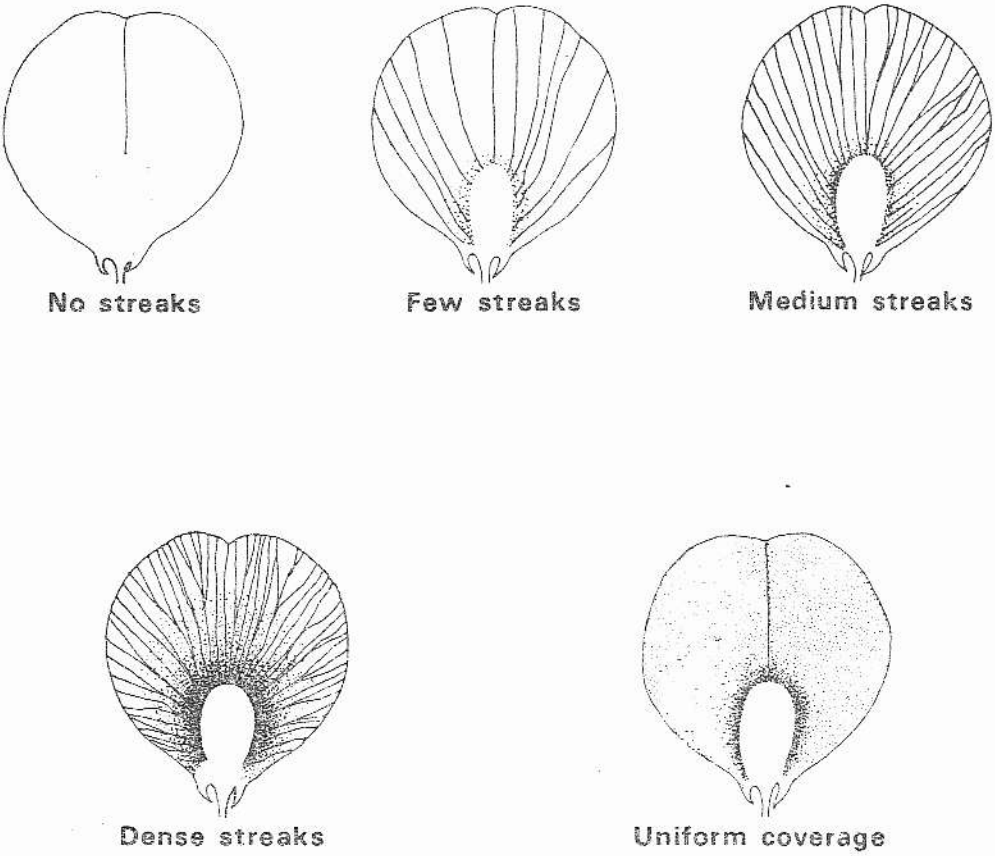

Figure 1. Pattern of streaks

4.3.4 Flowering pattern

1 Determinate
2 Semi-determinate
3 Indeterminate

4.3.5 Raceme number

Average number of racemes calculated from 3 plants randomly chosen in the row

4.4 POD BEARING LENGTH

Distance between lowest and topmost pod on the plant, in centimetres

4.5 POD COLOUR

Main colour of the pod

1 Green
2 Light purple
3 Purple
4 Mixed, uniformly streaked
5 Basal purple (near pedicel): [can be classi-
6 Periferal purple (on sutures): fied in 4]

4.6 SEED

4.6.1 Seed colour pattern

See Figure 2

1 Plain
2 Mottled
3 Speckled
4 Mottled and speckled
5 Ringed

Figure 2. Seed colour pattern

4.6.2 Seed main colour

Royal Horticultural Society Colour Chart numbers in parenthesis

1 White (Yellow white 158 C)
2 Cream (Greyed white 156 C)
3 Orange (Greyed orange 163 B)
4 Light brown (Yellow orange 22 C)
5 Brown (Brown 200 D)
6 Light grey (Grey brown 199 B)
7 Grey (Greyed green 197 A)
8 Purple (Greyed purple 187 A)
9 Dark purple (Greyed purple 187 B)
10 Black (Black 202 A)

4.6.3 Seed second colour

Second colour of seed coat coded as in 4.6.2 for main colour with 0 representing absence of second seed colour

4.6.4 Eye colour

Colour around hilum, coded as in 4.6.2 for main colour with 0 representing absence of eye

4.6.5 Eye size

0 No eye
3 Narrow
5 Medium
7 Wide

4.6.6 Seed shape

See Figure 3

1 Oval (egg shape)
2 Pea (globular shape)
3 Square (angular shape)
4 Elongate

Figure 3. Seed shape

4.6.7 Hilum

Presence of seed strophiole

0 Flat hilum, strophiole absent
\+ Protruding strophiole, present

PRELIMINARY EVALUATION

5. AGRONOMIC EVALUATION

5.1 DAYS TO 50% FLOWERING

Number of days from date of sowing or first irrigation to when 50% of plants are flowering

5.2 DAYS TO 75% MATURITY

Number of days from date of sowing or first irrigation to 75% maturity

5.3 PLANT HEIGHT

At maturity in centimetres

5.4 SEED NUMBER PER POD

Average from ten randomly chosen pods of 3 plants randomly selected in a row

5.5 100 SEED WEIGHT

A random sample taken from total row yield, in grams

5.6 YIELD

Expressed on a 1-9 scale, where

3 Low
5 Average
7 High

5.7 HARVEST INDEX

Ratio of total grain yield and total biological yield taken from 3 plants randomly selected in a row

5.8 SHELLING PERCENTAGE

Calculated from seed-pod ratio of 3 plants randomly selected in a row

FURTHER EVALUATION

6. DISEASE REACTION

Specify disease and degree of damage using a scale from 1-9, where

1 Resistant
3 Moderately resistant
5 Tolerant
7 Moderatly susceptible
9 Susceptible

7. PEST REACTION

Specify pest and degree of damage using a scale from 1 to 9, where

1 Resistant
3 Moderately resistant
5 Tolerant
7 Moderately susceptible
9 Susceptible

8. QUALITY ANALYSES

8.1 PROTEIN CONTENT

Whole seed crude protein percentage measured by dye-binding method or Autotechnicon Analyser on dry weight basis

8.2 HARD SEEDS

In percentage

8.3 DHAL MILLING

Percentage of dhal (dehusked split peas) after milling

8.4 COOKABILITY OF DHAL

Increase in volume (V/V) after soaking for 24 hours and boiling for 25 minutes

8.5 COOKABILITY OF DRY SEEDS

Increase in volume (V/V) after soaking for 24 hours and boiling for 25 minutes

APPENDIX

LIST OF PARTICIPANTS

ICRISAT and IBPGR acknowledges with gratitude the inputs of the following people who critically reviewed the draft descriptors at the International Pigeonpea Workshop, 15-19 December 1980, offered modifications and helped to finalize the descriptors:

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