DESCRIPTORS FOR COWPEA
INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

COWPEA DESCRIPTORS

IBPGR SECRETARIAT

Rome, 1983
The International Board for Plant Genetic Resources (IBPGR) is an autonomous, international scientific organization under the aegis of the Consultative Group on International Agriculture Research (CGIAR). The IBPGR, which was established by the CGIAR in 1974, is composed of its chairman and 16 members; 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 centers 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 Executive Secretariat
Crop Genetic Resource Centre
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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IBPGR descriptors lists are available for the following crops:

*Allium* (1982)  
Almond (1981)  
Amaranth (1981)  
Apple (1982)  
Apricot (1980)  
Banana and Plantains (1978)  
Barley (1982)  
Beets (1980)  
Cocoa (1981)  
Coconut (1978)  
Coffee (1980)  
Colocasia (1980)  
Cotton (1980)  
Groundnut (1981)  
Lupin / Lupinos (1981)  
Maize (1980)  
Mung Bean (1980)  
Oca (1982)  
Pear (1983)  
Pearl Millet (1981)  
*Phaseolus vulgaris* (1982)  
*Pigeonpea* (1981)  
Potato cultivated (1977)  
Quinua (1981)  
Rice (1980)  
Safflower (1983)  
Sesame (1981)  
Sorghum (1980)  
Sugarcane (1982)  
Sweet Potato (1981)  
Tomatoes (1981)  
Tropical Fruits, revised (1980)  
Winged Bean, revised (1982)  
Wheat, revised (1981)  
Yams (1980)

A full request list for IBPGR publications including Crop Reports, Descriptor Lists, Reports on Regions, Conservation and Information, Newsletters, Annual Reports and Germplasm Directories can be obtained from the IBPGR Secretariat, Rome.
PREFACE

This descriptor list for cowpea, *Vigna unguiculata* (L.) Walp., is based upon a list prepared by W.M. Steele.

This descriptor list has been prepared in an IBPGR standard format following advice on descriptors and descriptor states from the crop experts throughout the world. The IBPGR encourages the collection of data on the first four categories of this list 1. Accession; 2. Collection; 3. and 4. Characterization and preliminary evaluation. The IBPGR endorses the information in categories 1 – 4 as the minimum that ideally should be available for any one accession. Other descriptors are given in categories 5 onwards that will enable the simple encoding of further characterization and evaluation data and which can serve as examples for the creation of additional descriptors in the IBPGR form for any user.

Although the suggested coding should not be regarded as the definitive scheme, this format has the full backing of the IBPGR and is promoted worldwide. The descriptor list given here provides an international format and thereby produces a universally understood ‘Language’ for all plants genetic resource data. The adoption of this scheme for all data encoding, or at least the production of a transformation method to convert other schemes to the IBPGR format, will produce a rapid, reliable and effective means for information storage, retrieval and communication. This will greatly assist the utilization of germplasm throughout the international plant genetic resource network. It is recommended, therefore, that information should be produced by closely follow this descriptors list with regard to: ordering and numbering descriptors; using the descriptors specified; and using the descriptors states recommended.

Any suggestions for modifications will be welcomed by the IBPGR Secretariat, Rome.
DESCRIPTOR LIST FOR COWPEA

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 normally be the responsibility of the curators, while further characterization and evaluation should be carried out by the plant breeder. The data from further evaluation should be fed back to the crop coordinator who will maintain a data file.

The following internationally accepted norms for the scoring or coding of descriptor states should be followed as indicated below:

a) Measurements are made in metric units;

b) 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. in 8. (Pest and disease susceptibility) 1 = extremely low susceptibility and 8 = high to extremely high susceptibility;

c) Presence/absence of characters are scored as 1 (present) and 0 (absent);

d) For descriptors which are not generally uniform throughout the accession (e.g. mixed collection, genetic segregation) mean and standard deviation could be reported where the descriptor is continuous or mean and 'x' where the descriptor is discontinuous

e) When the descriptor is inapplicable, '0' is used as the descriptor value. For example, if an accession does not form flowers, a '0' would be scored for the following descriptor

**Flower colour**

1  White
2  Yellow
3  Red
4  Purple
f) Blanks are used, for information not yet available;

g) Standard colour charts e.g. Royal Horticultural Society Colour Chart, Methuen Handbook of Colour, Munsell Color Charts for Plant Tissues are strongly recommended for all ungraded colour characters (the precise chart used should be specified).
PASSPORT

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 if an accession is lost, its assigned number is still not available for re-use. Letters should occur before the number to identify the genebank or national system (e.g. MG indicates an accession comes from the genebank at Bari, Italy. PI indicates an accession with the USA system)

1.2 DONOR NAME
Name of institution or individual responsible for donating the germplasm

1.3 DONOR IDENTIFICATION NUMBER
Number assigned to accession by the donor

1.4 OTHER NUMBERS ASSOCIATED WITH THE ACCESSION
(Other numbers can be added as 1.4.3 etc.)
Any other identification number known to exist in other collections for this accession, e.g. USDA Plant Introduction number (not collection number, see 2.1)

1.4.1 Other number 1
1.4.2 Other number 2

1.5 SCIENTIFIC NAME

1.5.1 Genus
1.5.2 Species
1.5.3 Subspecies
1.5.4 Botanic Variety

1.6 PEDIGREE / CULTIVAR NAME
Nomenclature and designations assigned to breeder’s material

1.7 ACQUISITION DATE
The month and year in which the accession entered the collection, expressed numerically, e.g. June = 06, 1981 = 18

1.8 DATE OF LAST REGENERATION OR MULTIPLICATION
The month and year expressed numerically, e.g. October = 10, 1978 = 78

1.9 ACCESSION SIZE
Approximate number of seeds or plants of accession in collection

1.10 NUMBER OF TIMES ACCESSION REGENERATED
Number of regenerations or multiplications since original collection

2 COLLECTION DATA

2.1 COLLECTOR’S NUMBER
Original number assigned by collector of the sample normally composed of the name or initials of the collector (s) followed by a number. This item is essential for identifying duplicates held in different collections and should always accompany sub-samples wherever they are sent

2.2 COLLECTING INSTITUTE
Institute or person collecting/sponsoring the original sample

2.3 DATE OF COLLECTION OF ORIGINAL SAMPLE

2.3.1 Month

2.3.2 Year

2.4 COUNTRY OF COLLECTION OR COUNTRY WHERE CULTIVAR / VARIETY BRED
Use the three letter abbreviations supported by the Statistical Office of the United Nations. Copies of these abbreviations are available from the IBPGR Secretariat and have been published in the FAO/IBPGR Plant Genetic Resource Newsletter number 49

2.5 PROVINCE / STATE
Name of the administrative subdivision of the country in which the sample was collected

2.6 LOCATION OF THE COLLECTING SITE
Number of kilometers and direction from nearest town, village or map grid reference (e.g. TIMBUKTU7S means 7 km south of TIMBUKTU)

2.7 LATITUDE OF COLLECTION SITE
Degrees and minutes followed by N (north) or S (south), e.g. 1030s

2.8 LONGITUDE OF THE COLLECTING SITE
Degrees and minutes followed by E (east) or W (west), e.g. 7625W

2.9 ALTITUDE OF THE COLLECTING SITE [m]
2.10 **COLLECTING SOURCE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wild</td>
</tr>
<tr>
<td>2</td>
<td>Farm land</td>
</tr>
<tr>
<td>3</td>
<td>Farm store</td>
</tr>
<tr>
<td>4</td>
<td>Backyard</td>
</tr>
<tr>
<td>5</td>
<td>Village market</td>
</tr>
<tr>
<td>6</td>
<td>Commercial market</td>
</tr>
<tr>
<td>7</td>
<td>Institute</td>
</tr>
<tr>
<td>8</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

2.11 **STATUS OF SAMPLE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wild</td>
</tr>
<tr>
<td>2</td>
<td>Weedy</td>
</tr>
<tr>
<td>3</td>
<td>Breeders line</td>
</tr>
<tr>
<td>4</td>
<td>Primitive cultivar (landrace)</td>
</tr>
<tr>
<td>5</td>
<td>Advanced cultivar (bred)</td>
</tr>
<tr>
<td>6</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

2.12 **LOCAL / VERNACULAR NAME**

Name given by the farmer to cultivar/landrace/weed

2.13 **NUMBER OF PLANTS SAMPLED**

Approximate number of plants collected in the field to produce this accession

2.14 **PHOTOGRAPH**

Was a photograph taken of the accession or environment at collection?

<table>
<thead>
<tr>
<th>Number</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2.15 **TOPOGRAPHY OF COLLECTION SITE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Swamp</td>
</tr>
<tr>
<td>2</td>
<td>Flood plain</td>
</tr>
<tr>
<td>3</td>
<td>Plain level</td>
</tr>
<tr>
<td>4</td>
<td>Undulating</td>
</tr>
<tr>
<td>5</td>
<td>Hilly</td>
</tr>
<tr>
<td>6</td>
<td>Mountainous</td>
</tr>
<tr>
<td>7</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

2.16 **LIGHT AT COLLECTION SITE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Shady</td>
</tr>
<tr>
<td>7</td>
<td>Sunny</td>
</tr>
</tbody>
</table>

2.17 **SOIL TEXTURE AT COLLECTION SITE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sandy</td>
</tr>
<tr>
<td>2</td>
<td>Loamy</td>
</tr>
<tr>
<td>3</td>
<td>Clay</td>
</tr>
<tr>
<td>4</td>
<td>Organic</td>
</tr>
</tbody>
</table>
5 Rocky

### 2.18 SOIL DRAINAGE AT THE COLLECTING SITE

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Poor</td>
</tr>
<tr>
<td>7</td>
<td>Good</td>
</tr>
</tbody>
</table>

### 2.19 FREQUENCY AT COLLECTING SITE

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rate</td>
</tr>
<tr>
<td>2</td>
<td>Occasional</td>
</tr>
<tr>
<td>3</td>
<td>Frequent</td>
</tr>
<tr>
<td>4</td>
<td>Abundant</td>
</tr>
<tr>
<td>5</td>
<td>Very abundant</td>
</tr>
</tbody>
</table>

### 2.20 GROWTH HABIT

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determinate</td>
</tr>
<tr>
<td>2</td>
<td>Indeterminate bush</td>
</tr>
<tr>
<td>3</td>
<td>Indeterminate spreading not climbing</td>
</tr>
<tr>
<td>4</td>
<td>Indeterminate twining and climbing</td>
</tr>
<tr>
<td>5</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

### 2.21 IF UNDER CULTIVATION: CROP

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monoculture</td>
</tr>
<tr>
<td>2</td>
<td>Mixed with cereals</td>
</tr>
<tr>
<td>3</td>
<td>Mixed with root crops</td>
</tr>
<tr>
<td>4</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

### 2.22 ORGANS USED AS PRIMARY PRODUCT

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green fodder</td>
</tr>
<tr>
<td>2</td>
<td>Dry fodder</td>
</tr>
<tr>
<td>3</td>
<td>Grain</td>
</tr>
</tbody>
</table>

### 2.23 IF UNDER CULTIVATION: DENSITY

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>7</td>
<td>High</td>
</tr>
</tbody>
</table>

### 2.24 PESTS AND DISEASES OF COLLECTION SAMPLE

Specify, using the item numbers of the pests and diseases (Section 8) and severity of infection 1 – 9 scale. ‘0’ indicates that the sample has no pests or diseases.

### 2.25 HERBARIUM SPECIMEN

Was herbarium specimen collected?

<table>
<thead>
<tr>
<th>Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 2.26 OTHER NOTES FROM COLLECTOR

Collectors will record ecological information. For cultivated crops, cultivation practices such as irrigation, season of sowing, etc. will be recorded.
CHARACTERIZATION AND PRELIMINAR EVALUATION DATA

3 SITE DATA

3.1 COUNTRY OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 SITE (RESEARCH INSTITUTE)

3.3 NAME OF PERSON IN CHARGE OF CHARACTERIZATION

3.4 SOWING DATE

3.4.1 Day

3.4.2 Month

3.4.3 Year

3.5 HARVEST DATE

3.5.1 Day

3.5.2 Month

3.5.3 Year

4 PLANT DATA

4.1 VEGETATIVE

4.1.1 Growth habit
Evaluated in the 6th week after sowing
1 Acute erect (branches form acute angles with main stem)
2 Erect (branching angle less acute than above)
3 Semi-erect (branches perpendicular to main stem, but not touch ground)
4 Intermediate (most lower branches touch the ground)
5 Semi-prostrate (main stem reaches 20 or more centimeters)
6 Prostrate (plants flat on ground; branches spread several meters)
7 Climbing

4.1.2 Growth pattern
1 Determinate (apical bud of main stem reproductive)
2 Indeterminate
4.1.3 Twinning tendency
0 None
3 Slight
5 Intermediate
7 Pronounced

4.1.4 Plant pigmentation
Recorded for stem, branches, petioles and peduncles in the 6th week after sowing
0 None
1 Very slight
3 Moderate at the base and tips of petioles
5 Intermediate
7 Extensive
9 Solid

4.1.5 Terminal leaflet shape
Recorded for the terminal leaflet of a young, mature leaf in the 6th week after sowing
1 Globose
2 Sub–globose
3 Sub–hastate
4 Hastate

4.1.6 Plant hairiness
Of stems, leaves and pods
Reference
3 Glabrescent Most cultivars
5 Short appressed hairs var. pubescens
7 Pubescent to hirsute var. protracta

4.2 INFLORESCENCE AND FRUIT

4.2.1 Days to flowering
From sowing to stage when 50% of plants have begun to flower.
Recorded for plants with the same sowing date, at the same location, each year

4.2.2 Raceme position
Recorder when peduncles have reached full length
1 Mostly above canopy
2 In upper canopy
3 Throughout canopy

4.2.3 Days to first mature pods
From sowing to stage when 50% of plants have mature pods
4.2.4 Pod attachment to peduncle
Recorded when pods are full grown
3 Pendant
5 30 – 90° down from erect
7 Erect

4.2.5 Immature pod pigmentation
Pattern of pigment distribution on full grown immature pods
0 None
1 Pigmented tip
2 Pigmented sutures
3 Pigmented valves, green sutures
4 Splashes of pigment
5 Uniformly pigmented
6 Other (specify in the notes descriptor, 11)

4.2.6 Pod curvature
Of mature pods
0 Straight
3 Slightly curved
5 Curved
7 Coiled

4.2.7 Pod length [cm]
Mean of the 10 longest mature pods from 10 randomly selected plants

4.2.8 Number of locules per pod
Mean number of the 10 pods measured for length in 4.2.7
4.3 SEED

4.3.1 Seed Shape
(See figure 1)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney</td>
<td>4</td>
<td>Globose</td>
</tr>
<tr>
<td>2</td>
<td>Ovoid</td>
<td>5</td>
<td>Rhomboid</td>
</tr>
<tr>
<td>3</td>
<td>Crowder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1 Seed shape
4.3.2 Testa texture
1 Smooth
3 Smooth to rough
5 Rough (fine reticulation)
7 Rough to wrinkled
9 Wrinkled (coarse folds on the testa)

4.3.3 Eye pattern
The shape of the pigment pattern which surrounds the hilum. The ‘front’ of the hilum is the non-micropylar end. Diagrams illustrating the following descriptor states are available from the Genetic Resources Unit at International Institute of Tropical Agriculture (IITA); Ibadan, Nigeria (where a large number of sub-divisions of each state are in use)

<table>
<thead>
<tr>
<th>Group</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>1</td>
<td>Very Small</td>
</tr>
<tr>
<td>2</td>
<td>Kabba group (Eye fills the narrow groove all around the hilum, and the body has some form of speckling. A blue halo is also found around the hilum)</td>
</tr>
<tr>
<td>3</td>
<td>Narrow eye (Hilum Ring. Eye fills the narrow groove around the hilum and spills out of this groove in front of the hilum for a short distance and has an indistinct front margin)</td>
</tr>
<tr>
<td>4</td>
<td>Small eye (eye has a distinct margin, but is smaller than Holstein group)</td>
</tr>
<tr>
<td>5</td>
<td>Holstein group (eye encircles the back of the hilum in a narrow ring, widens at the sides, and then extends margin of the eye is very distinct)</td>
</tr>
<tr>
<td>6</td>
<td>Watson group (eye encircles the back of the hilum as a narrow ring, widens at the sides and spills over the non-micropylar end of the seed with an indistinct margin. The extra width at the sides of the hilum distinguishes this group from 3, narrow eye)</td>
</tr>
<tr>
<td>7</td>
<td>Self coloured (eye covers entire seed)</td>
</tr>
<tr>
<td>8</td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

1 If the eye pattern is recorded as 0 or 1 (Group A), then eye colour (4.3.9) is always likewise recorded as 0 or 1 (Group W)
4.3.4 Eye colour

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Eye absent (white, cream)</td>
</tr>
<tr>
<td>W</td>
<td>Brown splash or gray</td>
</tr>
<tr>
<td>T</td>
<td>Tan Brown</td>
</tr>
<tr>
<td>R</td>
<td>Red</td>
</tr>
<tr>
<td>G</td>
<td>Green</td>
</tr>
<tr>
<td>B</td>
<td>Blue to black</td>
</tr>
<tr>
<td>X</td>
<td>Blue to black spots or mottle</td>
</tr>
<tr>
<td>S</td>
<td>Speckled (even distribution of fine speckling)</td>
</tr>
<tr>
<td>M</td>
<td>Mottled (dark brown pigment typically absent around hilum)</td>
</tr>
<tr>
<td>V</td>
<td>Mottled and speckled (Victor)</td>
</tr>
<tr>
<td></td>
<td>Other (specify in the Notes descriptor, 11)</td>
</tr>
</tbody>
</table>

4.3.5 Seed weight [mg]

Weight of 100 seeds moisture content 12%

FURTHER CHARACTERIZATION AND EVALUATION

5 SITE DATA

5.1 COUNTY OF FURTHER CHARACTERIZATION AND EVALUATION

5.2 SITE (RESEARCH INSTITUTE)

5.3 NAME OF PERSON IN CHARGE OF EVALUATION

5.4 SOWING DATE

5.4.1 Day

5.4.2 Month

5.4.3 Year

5.5 HARVEST DATA

5.5.1 Day

5.5.2 Month

---

2 Group W (states 0 and 1) is only used in combination with Group A (states 0 and 1) for eye pattern (4.3.8)
6 PLANT DATA

6.1 VEGETATIVE

6.1.1 Hypocotyl length [mm]
Mean of 10 plants

6.1.2 Leaf colour
Intensity of green colour
3 Pale Green
5 Intermediate green
7 Dark green

6.1.3 Leaf marking
Presence/absence of V-mark on leaflets
0 Absent
1 Present

6.1.4 Terminal leaflet length [mm]
Terminal leaflet whose shape was recorded in 4.1.5

6.1.5 Terminal leaflet width [mm]
The widest dimension of the terminal leaflet whose shape was recorded in 4.1.5

6.1.6 Leaf texture
1 Cariaceous
2 Intermediate
3 Membranous

6.1.7 Stipule length [mm]

6.1.8 Stipule width [mm]

6.1.9 Number of main branches
The branches whose origin is in the leaf axils on the main stem; recorded in the 8th week after sowing. Mean of 10 randomly selected plants

6.1.10 Number of nodes on main stem
Recorded 3 – 4 weeks after sowing. Mean of 10 randomly selected plants
6.1.11  **Plant vigour**
Based on plant width and height 3 – 4 weeks after sowing
3  Non-vigorous (height less than 37 cm and width less than
    75 cm
5  Intermediate (height greater than 37 cm or width greater
    than 75 cm
7  Vigorous (height greater than 37 cm and width greater
    than 75 cm)
9  Very vigorous (height greater than 50 cm and width
    greater than 1 m)

6.1.12  **Leaf–stem ratio**
Weight of leaves divided by weight of other parts of shoot

6.1.13  **Percentage dry weight**
Percentage of dry matter in 500 g sample of green plant

6.1.14  **Yield of green matter**
Average yield in grams of 10 randomly selected plants weighed at 50%
    flowering

6.1.15  **Capacity for re-growth**
Weight of green matter in grams at 50% flowering after the accession has
    been cut at six week stage

6.1.16  **In vitro dry matter digestibility**
Digestibility of green fodder at 50% flowering

6.2  **INFLORESCENCE AND FRUIT**

6.2.1  **Flowering pigment pattern**
Of newly opened flowers
0  Not pigmented (white)
1  Wing pigmented; standard with light V-shaped pattern of
    pigment at top center
2  Pigmented margins on wing and standard
3  Wing pigmented; standard lightly pigmented
4  Wing with pigmented upper margin; standard is
    pigmented
5  Completely pigmented
6  Other (specify in the Notes descriptor, 11)

6.2.2  **Flower colour**
1  White
2  Violet
3  Mauve–pink
4  Other (specify in the Notes descriptor, 11)

6.2.3  **Standard length [mm]**
A measure of flowers size; the mean length of 10 freshly opened, randomly selected standard petals

6.2.4  **Calyx lobe length [mm]**

6.2.5  **Duration of flowering**
Days from first flowers to stage when 50% of plants have finished flowering

6.2.6  **Number of racemes per plant**
Mean of 10 randomly selected plants

6.2.7  **Peduncle length [mm]**
Recorded when peduncles have grown full length. Mean length of 10 peduncles, one from each of 10 randomly selected plants

6.2.8  **Number of pods per peduncle**
Recorded under total insect control. Mean of 10 randomly selected peduncles

6.2.9  **Number of pods per plant**
Mean number of mature pods from 10 randomly selected plants

6.2.10  **Pod width [cm]**
Mean width of the 10 pods measured for length in 4.2.10

6.2.11  **Pod wall thickness**
3  Thin
5  Intermediate
7  Thick

6.2.12  **Pod colour**
Of mature pod
1  Pale tan or straw
2  Dark tan
3  Dark brown
4  Black or dark purple
5  Other (specify in the Notes descriptor, 11)
6.3 SEED

6.3.1 Seed length [mm]
Mean of 10 mature seeds excluding those from the extremities of pods

6.3.2 Seed width [mm]
Mean width from hilum to keel of the 10 seeds measured for length in 6.3.1

6.3.3 Seed thickness [mm]
Mean thickness of the 10 seeds measured for length in 6.3.1; measured perpendicular to length and width

6.3.4 Seed crowding
A visual estimate of seed compression, being indicative of spacing within the pod

0  Not crowded (no compression of seed ends)
3  Semi-crowded (slight flattening of seed ends)
5  Crowded (marked compression of seed ends)
7  Extremely crowded (seed width greater than seed length)

6.3.5 Splitting of testa
0  Absent
1  Present (testa split exposing cotyledons)

6.3.6 Attachment of testa
0  Testa not firmly attached to seed
1  Testa firmly attached to seed

6.3.7 Percentage seed protein

7 STRESS SUSCEPTIBILITY
Scored on a 1-9 scale, where

3  Low susceptibility
5  Medium susceptibility
7  High susceptibility

7.1 LOW TEMPERATURE

7.2 HIGH TEMPERATURE

7.3 DROUGHT
7.4 HIGH SOIL MOISTURE

8 PEST AND DISEASE SUSCEPTIBILITY

Scored for natural infection or infestation on a 1-9 scale, where

3 Low susceptibility
5 Medium susceptibility
7 High susceptibility

8.1 PESTS

8.1.1 *Acanthomia horrida*  
*Anoplocnemis curvipes*  
*Riptortus dentipes*  
Coried bugs

8.1.2 *Alcidodes leucogrammus*  
Striped bean weevil

8.1.3 *Aphis craccivora*  
Cowpea aphid

8.1.4 *Aphis fabae*  
Pea aphid

8.1.5 *Callosobruchus chinensis*  
*Callosobruchus maculatus*  
Cowpea storage weevil

8.1.6 *Chalcodermus aeneus*  
Cowpea curculio

8.1.7 *Chrysolagria* spp.  
Beetle

8.1.8 *Cydia ptychora*  
Pod borer

8.1.9 *Empoasca Kerri*  
*Empoasca signata*  
*Empoasca* spp.  
Leaf hoppers

8.1.10 *Epilachna* spp.  
Epilachna beetles

8.1.11 *Etiella zinckenella*  
Lima bean pod borer

8.1.12 *Heliothis armigera*  
African bollworm

8.1.13 *Lagria villosa*  
Beetle

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8.1.14 *Maruca testulalis*  
Legume pod borer

8.1.15 *Matsumuraeses phaseoli*  
Adzuki pod borer

8.1.16 *Medythia quaterna*  
Striped foliage beetle

8.1.17 *Megalurothrips sjostedti*  
Flower thrips

8.1.18 *Mylabris* spp.  
Blister beetle

8.1.19 *Nezara viridula*  
Green stink bug

8.1.20 *Ootheca bennigseni*  
Foliage beetles

8.1.21 *Piezotrachelus varius*  
Pod weevil

8.1.22 *Sericothrips occipitalis*  
Foliage thrips

8.1.23 *Spodoptera littoralis*  
Egyptian leaf worm

8.1.24 Other (specify in the Notes descriptor, 11)

8.2 **FUNGI**

8.2.1 *Ascochyta phaseolorum Sacc.*  
Ascochyta blight

8.2.2 *Cercospora canescens*  
Cercospora leaf spot

Ellis & Martin  
*Cercospora cruenta Sacc.*

8.2.3 *Choanephora* spp.  
Lamb’s tail pod tot

8.2.4 *Collectrichum capisici*  
Brown blotch

Colletotrichum truncatum  
(Schw.) Andrus & Moore

8.2.5 *Collectrichum Lindemuthianum*  
Anthracnose  
(sacc. & Magn.) Bri. & Cav.

8.2.6 *Corynespora cassiicola*  
Target leaf spot

8.2.7 *Elsinoë phaseoli Jenkins*  
Scab

8.2.8 *Erysiphe polygoni DC.*  
Powdery mildew
8.2.9 *Fusarium oxysporum* Shlect  
Fusarium wilt

8.2.10 *Fusarium solani* (Mart) Appel & Wollenw  
Fusarium collar and stem rot

8.2.11 *Phakosora pachyrizi* Syd.  
Pink rust

8.2.12 *Phytophthora cactorum* (Leb. & Cohn) Schroet  
Phytophthora stem rot

8.2.13 *Protomycopsis phaseoli*  
Leaf smut

8.2.14 *Pythium aphanidermatum* (Edson) Fritz.  
Pythium stem rot

8.2.15 *Pythium aphanidermatum* (Edson) Fritz.  
Seedling mortality

8.2.16 *Rhizoctonia solani* Kuehn  
Seedling mortality

8.2.17 Rhizoctonia solani Kuehn  
Web blight

8.2.18 *Sclerotium rolfsii* Sacc.  
Sclerotium stem rot

8.2.19 *Septoria vignae*  
Septoria leaf spot

8.2.20 *Septoria vignicola*  
Septoria leaf spot

8.2.21 *Synchytrium dolichi*  
False rust

8.2.22 *Verticillium albo-atrum* Reinke & Berth  
Vetricillium wilt

8.2.23 Others (specify in the Notes descriptors, 11)

8.3 BACTERIA

8.3.1 *Xanthomonas vignicola* Burkh.  
Bacterial light and canker

8.3.2 Others (specify in the Notes descriptor, 11)

8.4 VIRUS AND MICROPLASM
8.4.1 Cowpea aphid–borne mosaic
8.4.2 Cowpea banding mosaic
8.4.3 Cowpea chloritic mottle
8.4.4 Cowpea golden mosaic
8.4.5 Cowpea mild mottle
8.4.6 Cowpea mottle
8.4.7 Cowpea ringspot
8.4.8 Cowpea (severe) mosaic
8.4.9 Cowpea (yellow) mosaic
8.4.10 Cucumber mosaic
8.4.11 Southern bean mosaic
8.4.12 Sunn–hemp mosaic
8.4.13 Others (specify in the Notes descriptors, 11)

9 ALLOENZYME COMPOSITION
This may prove to be a useful tool for identifying duplicate accessions

10 CYTOLOGICAL CHARACTERS AND IDENTIFIED GENES

11 NOTES
Give additional information where descriptor state is noted as ‘Other’ as, for example, in descriptors 2.10, 4.2.5, etc. Also include here any further relevant information
APPENDIX

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