



**DESCRIPTORS**

**FOR**

**COWPEA**

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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 Agricultural 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 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 Consultative Group mobilizes financial support from its members to meet the budgetary requirements of the Board.

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IBPGR descriptor lists are available for the following crops:

<u>Allium</u> (1982)	Oca (1982)
Almond (1981)	Pear (1983)
Amaranth (1981)	Pearl Millet (1981)
Apple (1982)	<u>Paseolus vulgaris</u> (1982)
Apricot (1980)	Pigeonpea (1981)
Banana and Plantains (1978)	Potato, cultivated (1977)
Barley (1982)	Quinoa (1981)
Beets (1980)	Rice (1980)
Cocoa (1981)	Safflower(1983)
Coconut (1978)	Sesame (1981)
Coffee (1980)	Sorghum (1980)
<u>Colocasia</u> (1980)	Sugarcane (1982)
Cotton (1980)	Sweet Potato (1981)
Groundnut (1981)	Tomatoes (1981)
Lupin/lupinos (1981)	Tropical Fruits, revised (1980)
Maize (1980)	Winged Bean, revised (1982)
Mung Bean (1980)	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 plant 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 resources network. It is recommended, therefore, that information should be produced by closely following this descriptor list with regard to: ordering and numbering descriptors; using the descriptors specified; and using the descriptor states recommended.

Any suggestions for modifications will be welcomed by the IBPGR Secretariat, Rome.

DESCRIPTOR LIST FOR COWPEA

The IPBGR 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 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 curator 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 + (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, e.g. 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 Botanical 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

1.7.1 Month

1.7.2 Year

1.8. DATE OF LAST REGENERATION OR MULTIPLICATION

The month and year expressed numerically, e. g.

October = 10, 1978 = 78

1.8.1 Month

1.8.2 Year

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 Resources 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 COLLECTING SITE

Number of kilometres 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 COLLECTION SITE

Degrees and minutes followed by E (east) or W (west), e.g. 7625W

2.9 ALTITUDE OF COLLECTION SITE

Elevation above sea level in metres

2.10 COLLECTION SOURCE

- 1 Wild
- 2 Farm land
- 3 Farm store
- 4 Backyard
- 5 Village market
- 6 Commercial market
- 7 Institute
- 8 Other (specify in the NOTES dextriptor, 11)

2.11 STATUS OF SAMPLE

- 1 Wild
- 2 Weedy
- 3 Breeders line
- 4 Primitive cultivar (landrace)
- 5 Advanced cultivar (bred)
- 6 Other (specify in the NOTES descriptor, 11)

2.12 LOCAL/VERNACULAR NAME

Name given by 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?

0 No

+ Yes

2.15 TOPOGRAPHY OF COLLECTION SITE

1 Swamp

2 Flood plain

3 Plain level

4 Undulating

5 Hilly

6 Mountainous

7 Other (specify in the NOTES descriptor, 11)

2.16 LIGHT AT COLLECTION SITE

3 Shady

7 Sunny

2.17 SOIL TEXTURE AT COLLECTION SITE

1 Sandy

2 Loamy

3 Clay

4 Organic

5 Rocky

2.18 SOIL DRAINAGE AT COLLECTION SITE

- 3 Poor
- 7 Good

2.19 FREQUENCY AT COLLECTION SITE

- 1 Rate
- 2 Occasional
- 3 Frequent
- 4 Abundant
- 5 Very abundant

2.20 GROWTH HABIT

- 1 Determinate
- 2 Indeterminate bush
- 3 Indeterminate spreading not climbing
- 4 Indeterminate twining and climbing
- 5 Other (specify in the NOTES descriptor, 11)

2.21 IF UNDER CULTIVATION: CROP

- 1 Monoculture
- 2 Mixed with cereals
- 3 Mixed with root crops
- 4 Other (specify in the NOTES descriptor, 11)

2.22 ORGANS USED AS PRIMARY PRODUCT

- 1 Green fodder
- 2 Dry fodder
- 3 Grain.

2.23 IF UNDER CULTIVATION: DENSITY

- 3 Low
- 7 High

2.24 PESTS AND DISEASES OF COLLECTION SAMPLE

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

2.25 HERBARIUM SPECIMEN

Was a herbarium specimen collected?

0 No  
+ Yes

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 PRELIMINARY 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 do not touch ground)
- 4 Intermediate (most lower branches touch the ground)
- 5 Semi-prostrate (main stem reaches 20 or more centimetres above ground; branches spread 1 - 4 metres)
- 6 Prostrate (plants flat on ground; branches spread several metres)
- 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	<u>Reference</u>
3 Glabrescent	Most cultivars.
5 Short appressed hairs	var. <u>pubescens</u>
7 Pubescent to hirsute	var. <u>protracta</u>

## 4.2 INFLORESENCE 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

Recorded 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

In centimetres. Mean of the 10 longest  
mature pods from 10 randomly selected plants.

#### 4.2.8 Number of locules per pod

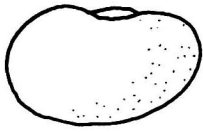
Mean number of the 10 pods measured for  
length in 4.2.7

### 4.3. SEED

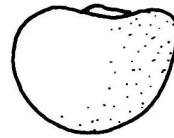
#### 4.3.1 Seed shape

See Figure 1

- 1 Kidney
- 2 Ovoid
- 3 Crowder
- 4 Globose
- 5 Rhomboid



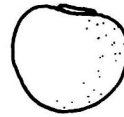
**Kidney**



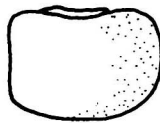
**Ovoid**



**Crowder**



**Globose**



**Rhomboid**

Figure 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).

	<u>Group</u>
0 Absent	A <sup>1/</sup>
1 Very small	A <sup>1/</sup>
2 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.)	K
3 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)	N

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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 Small eye (Eye has a distinct Group E margin, but is smaller than Holstein group)
- 5 Holstein group (Eye encircles H the back of the hilum in a narrow ring, widens at the sides, and then extends out in front of the hilum to varying degrees. The entire margin of the eye is very distinct.)
- 6 Watson group (Eye encircles the W 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.)
- 7 Self-coloured (Eye covers entire S seed)
- 8 Other (specify in the NOTES descriptor, 11).

4.3.4 Eye colour

	<u>Group</u>
0 Eye absent (white,cream)	W <u>1/</u>
1 Brown splash or grey	W <u>1/</u>
2 Tan brown	T
3 Red	R
4 Green	G
5 Blue to black	B
6 Blue to black spots or mottle	X
7 Speckled (even distribution of fine speckling)	S
8 Mottled (dark brown pigment typically absent around hilum)	M
9 Mottled and speckled(Victor)	V
10 Other (specify in the NOTES descriptor, 11)	

4.3.5 Seed weight

Weight of 100 seeds in mg, moisture content 12%

FURTHER CHARACTERIZATION AND EVALUATION

5. SITE DATA

5.1 COUNTRY OF FURTHER CHARACTERIZATION AND EVALUATION

5.2 SITE (RESEARCH INSTITUTE)

5.3 NAME OF PERSON IN CHARGE OF EVALUATION

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1/ Group W (states 0 and 1) is only used in combination with Group A (states 0 and 1) for eye pattern (4.3.8).

5.4 SOWING DATE

5.4.1 Day

5.4.2 Month

5.4.3 Year

5.5 HARVEST DATE

5.5.1 Day

5.5.2 Month

5.5.3 Year

6. PLANT DATA

6.1 VEGETATIVE

6.1.1 Hypocotyl length

In millimetres. 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

+ Present

6.1.4 Terminal leaflet length

Recorded in millimetres for the terminal leaflet whose shape was recorded in 4.1.5

6.1.5 Terminal leaflet width

Recorded in millimetres, 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

Recorded in millimetres

6.1.8 Stipule width

Recorded in millimetres

6.2.9 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

6.2.10 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 regrowth

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 centre
- 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

In millimetres. A measure of flower size; the mean length of 10 freshly opened, randomly selected standard petals

6.2.4 Calyx lobe length

In millimetres

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 from 10 randomly selected plants

6.2.7 Peduncle length

In millimetres. 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

In centimetres. 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 pods

- 1 Pale tan or straw
- 2 Dark tan
- 3 Dark brown
- 4 Black or dark purple
- 5 Other (specify in the NOTES  
descriptor, 11)

6.2 SEED

6.3.1 Seed length

In millimetres. Mean of 10 mature seeds  
excluding those from the extremities of pods

6.3.2 Seed width

In millimetres. Mean width from hilum to  
keel of the 10 seeds measured for length  
in 6.3.1

6.3.3 Seed thickness

In millimetres, 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
- + Present (testa split exposing cotyledons)

6.3.6 Attachment of testa.

- 0 Testa not firmly attached to seed
- + 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 <sup>1/</sup>

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 | <u>Acanthomia horrida</u>         | Coreid bugs           |
|       | <u>Acanthomia tomentosicollis</u> |                       |
|       | <u>Anoplocnemis curvipes</u>      |                       |
|       | <u>Riptortus dentipes</u>         |                       |
| 8.1.2 | <u>Alcidodes leucogrammus</u>     | Striped bean weevil   |
| 8.1.3 | <u>Aphis craccivora</u>           | Cowpea aphid          |
| 8.1.4 | <u>Aphis fabae</u>                | Pea aphid             |
| 8.1.5 | <u>Callosobruchus chinensis</u>   | Cowpea storage weevil |
|       | <u>Callosobruchus maculatus</u>   |                       |

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<sup>1/</sup> For information on pests and diseases see Singh, S.R., and D.J. Allen, 1980. Pests, Diseases, Resistance, and Protection in Cowpeas, p.419-443 to Advances in Legume Science, Ed. by R.J. Summerfield and A.H. Bunting. Royal Botanic Gardens, Kew, Surrey, England.

8.1.6	<u>Chalcodermus aeneus</u>	Cowpea curculio
8.1.7	<u>Chrysolagria spp.</u>	Beetle
8.1.8	<u>Cydia ptychora</u>	Pod borer
8.1.9	<u>Empoasca kerri</u> <u>Empoasca signata</u> <u>Empoasca spp.</u>	Leaf hoppers
8.1.10	<u>Epilachna spp.</u>	Epilachna beetles
8.1.11	<u>Etiella zinckenella</u>	Lima bean pod borer
8.1.12	<u>Heliothis armigera</u>	African bollworm
8.1.13	<u>Lagria villosa</u>	Beetle
8.1.14	<u>Maruca testulalis</u>	Legume pod borer
8.1.15	<u>Matsumuraeses phaseoli</u>	Adzuki pod borer
8.1.16	<u>Medythia quaterna</u>	Striped foliage beetle
8.1.17	<u>Megalurothrips sjostedti</u>	Flower thrips
8.1.18	<u>Mylabris spp.</u>	Blister beetles
8.1.19	<u>Nezara viridula</u>	Green stink bug
8.1.20	<u>Oothea bennigseni</u> <u>Oothea mutabilis</u>	Foliage beetles
8.1.21	<u>Piezotrachelus varius</u>	Pod weevil
8.1.22	<u>Sericothrips occipitalis</u>	Foliage thrips
8.1.23	<u>Spodoptera littoralis</u>	Egyptian leaf worm
8.1.24	<u>Others</u> (specify in the NOTES descriptor, 11)	

## 8.2 FUNGI

8.2.1	<u>Ascochyta phaseolorum</u> Sacc.	Ascochyta blight
8.2.2	<u>Cercospora canescens</u> Ellis & Martin	Cercospora leaf spot
8.2.3	<u>Cercospora cruenta</u> Sacc. <u>Choanephora spp.</u>	Lamb's tail pod rot

- 8.2.4 Colletotrichum capsici Brown blotch  
Colletotrichum truncatum  
(Schw.) Andrus & Moore
- 8.2.5 Colletotrichum Anthracnose  
lindemuthianum  
(Sacc. & Magn.) Bri. & Cav.
- 8.2.6 Corynespora cassicola Target leaf spot
- 8.2.7 Elsinoë phaseoli Jenkins Scab
- 8.2.8 Erysiphe polygoni DC. Powdery mildew
- 8.2.9 Fusarium oxysporum Fusarium wilt  
Schlecht.
- 8.2.10 Fusarium solani (Mart) Fusarium collar  
Appel & Wollenw. and stem rot
- 8.2.11 Phakopsora pachyrhizi Syd. Pink rust
- 8.2.12 Phytophthora cactorum Phytophthora stem  
(Leb. & Cohn) Schroet rot  
Phytophthora vignae
- 8.2.13 Protomyces phaseoli Leaf smut
- 8.2.14 Pythium aphanidermatum Pythium stem rot  
(Edson) Fritz.
- 8.2.15 Pythium aphanidermatum Seedling  
(Edson) Fritz. 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  
Septoria vignicola spot
- 8.2.20 Synchytrium dolichi False rust
- 8.2.21 Uromyces appendiculatus Brown rust

8.2.22 Verticillium albo-atrum Verticillium wilt  
Reinke & Berth.

8.2.23 Others (specify in the NOTES descriptor, 11)

### 8.3 BACTERIA

8.3.1 Xanthomonas vignicola Bacterial blight  
Burkh. and canker

8.3.2 Others (specify in the NOTES descriptor, 11)

### 8.4 VIRUS AND MICOPLASM

8.4.1 Cowpea aphid-borne mosaic

8.4.2 Cowpea banding mosaic

8.4.3 Cowpea chlorotic 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 descriptor, 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.

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**Cowpea descriptors**