



REVISED



**WINGED BEAN
DESCRIPTORS**

Cover: Winged bean evaluation in Thailand

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AGPG:IBPGR/81/78
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Replacing AGPE:IBPGR/79/5

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES
SOUTHEAST ASIA REGIONAL COMMITTEE

REVISED WINGED BEAN DESCRIPTORS

IBPGR SECRETARIAT
Rome, 1982

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 15 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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PREFACE

The IBPGR has supported a cooperative regional programme, in association with governments, in Southeast Asia since 1977. This programme is guided by a Committee with representatives from Indonesia, Malaysia, Papua New Guinea, Philippines and Thailand. Dr. Narong Chomchalow of Thailand, a present member of the IBPGR, is the Chairman of this Regional Committee.

The Regional Committee has identified a list of crops for priority action in the region. This list includes winged bean. A Working Group, convened by the IBPGR, met in Pattaya, Thailand, 20-21 November 1978 to discuss descriptors for winged bean documentation and a minimum list of descriptors was agreed and published (AGPE:IBPGR/79/5).

One of the recommendations of the above meeting was that a technical meeting should be convened in approximately two years time to assess the work done on germplasm collecting and to discuss how far characterization and evaluation had proceeded. This would enable an assessment of the effectiveness of the descriptors previously decided. The Working Group met in January 1981 at Colombo, Sri Lanka, a day before the start of the Second International Winged Bean Conference. The meeting produced the revised list of descriptors provided in this booklet. The participants in the Working Group are listed in the Appendix.

The meeting also made a number of suggestions with regard to sampling strategy, priority areas for collections and maintenance procedures. For more details the report of the Fourth Southeast Asia Regional Committee Meeting (AGP:IBPGR/81/80, Appendix V) can be consulted.

This descriptor list has been prepared in an IBPGR standard format following advice on 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 by 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 efficient 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 modification will be welcomed by the IBPGR Secretariat, Rome.

REVISED DESCRIPTOR LIST FOR WINGED BEAN



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 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 information does not exist (descriptor is inapplicable), '0' is used;

- f) blanks are used, for information not yet available;
- g) standard colour charts e.g. Royal Horticultural Society Colour Chart, Methuen Handbook of Colour, Munsel Colour Charts for Plant Tissues are strongly recommended for all upgraded 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. P.I. indicates an accession within 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

1.6 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 = 81

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

Expressed numerically, e.g. March = 03, 1980 = 80

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 COLLECTION SITE

Number of kilometres and direction from nearest town, village or map grid reference (e.g. TIMBUKTU7S means 7km 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)

2.11 STATUS OF SAMPLE

- 1 Wild
- 2 Weedy
- 3 Breeders line
- 4 Primitive cultivar (landrace)
- 5 Advanced cultivar (bred)
- 6 Other (specify)

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 TYPE OF SAMPLE

1 Vegetative
2 Seed
3 Both

2.16 ORGAN USED AS PRIMARY PRODUCT

1 Green pod
2 Grain
3 Tuber

2.17 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 Plant growth

Amount of plant growth at flowering

- 3 Sparse
- 5 Moderate
- 7 Abundant

4.1.2 Leaflet size

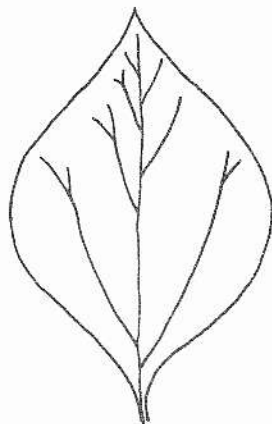
- 3 Small
- 5 Medium
- 7 Large

4.1.3 Leaflet shape (see Figure 1)

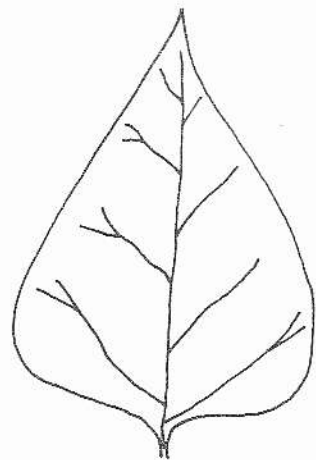
- 1 Ovate
- 2 Deltoid
- 3 Ovate-lanceolate
- 4 Lanceolate
- 5 Long-lanceolate

4.1.4 Stem colour

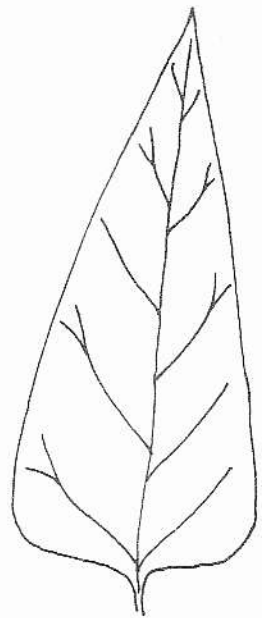
- 1 Green
- 2 Greenish purple
- 3 Purple
- 4 Other (specify)



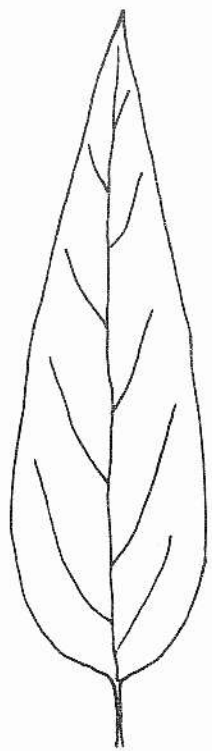
1 Ovate



2 Deltoid



3 Ovate-lanceolate



4 Lanceolate



5 Long-lanceolate

Figure 1. Leaflet Shape

4.1.5 Presence of tuber

- 0 Absent
- + Present

4.1.6 Tuber size

Diameter of the cross section at the widest point

- 3 Small (< 2 cm)
- 5 Medium (2-3 cm)
- 7 Large (> 3 cm)

4.2 INFLORESCENCE AND FRUIT

4.2.1 Calyx colour

- 1 Green
- 2 Greenish purple
- 3 Purple
- 4 Other (specify)

4.2.2 Corolla colour of wings and standard

- 1 White
- 2 Light blue
- 3 Blue
- 4 Other (specify)

The following pod descriptors are to be recorded when the pods are at a mature stage prior to drying out

4.2.3 Pod colour

Colour of the central portion of the pod

- 1 Cream
- 2 Green
- 3 Pink
- 4 Purple
- 5 Other (specify)

4.2.4 Presence of pod specks

Purple specks on the central portion of the pod

- 0 Absent
- + Present

4.2.5 Pod wing colour

- 1 Green
- 2 Purple
- 3 Other (specify)

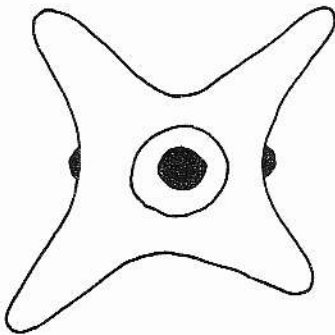
4.2.6 Pod surface texture

- 3 Smooth
- 5 Medium
- 7 Rough

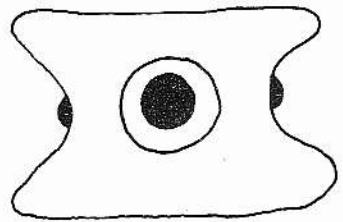
4.2.7 Pod shape (see Figure 2)

Shape in cross section at the centre of the pod

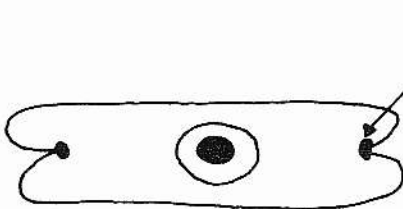
- 1 Rectangular
- 2 Semi-flat
- 3 Flat on sides
- 4 Flat on suture



1 Rectangular

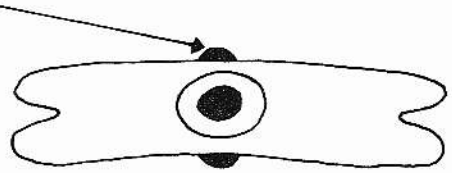


2 Semi-flat



3 Flat on sides

Suture



4 Flat on suture

Figure 2. Pod Shape

4.3 SEED

4.3.1 Seed colour

When dried at harvest

- 1 Cream
- 2 Tan
- 3 Brown
- 4 Purple
- 5 Black
- 6 Brown-black
- 7 Other (specify)

4.3.2 Presence of seed mottling

- 0 Absent
- + Present

4.3.3 Hilum colour

- 1 White
- 2 Black
- 3 Other (specify)

4.3.4 Seed shape

- 1 Round
- 2 Oval
- 3 Other (specify)

4.3.5 Seed surface

- 1 Smooth
- 2 Wrinkled

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

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 Days to emergence

Number of days from sowing to 50 percent seedling emergence

6.1.2 Number of tubers per plant

Number of tubers larger than 2cm, measured as a mean of 10 plants

6.1.3 Tuber yield per plant

Total tuber weight in grams, measured as a mean of 10 plants

6.2 INFLORESCENCE AND FRUIT

6.2.1 Photoperiod sensitivity

The effect of photoperiod on flower initiation

- 3 Insensitive
- 5 Intermediate
- 7 Sensitive

6.2.2 Days to first flowering

Number of days from sowing to first flower opening

6.2.3 Green pod yield per plant

Weight in grams of green pods at approximately two weeks after flower opening, measured as a mean of 10 plants

6.2.4 Number of marketable green pods per plant

Measured as a mean of 10 plants at green pod maturity

6.2.5 Number of dry pods per plant

Measured as a mean of 10 plants

6.2.6 Pod length

Measured in centimetres as a mean of 10 dry pods

6.2.7 Pod shattering

0	None
3	Low
5	Medium
7	High

6.3 SEED

6.3.1 Number of seeds per pod

Measured as a mean of 10 dry pods

6.3.2 100 seed weight

In grams

6.3.3 Seed yield per plant

Weight in grams after sundrying, measured as a mean of 10 plants

6.3.4 Shelling percentage

Seed yield per plant divided by dry pod weight per plant multiplied by 100, measured as a mean of 10 plants

7. STRESS SUSCEPTIBILITY

7.1 LOW TEMPERATURE

7.2 HIGH TEMPERATURE

7.3 DROUGHT

7.4 HIGH SOIL MOISTURE

8. PEST AND DISEASE SUSCEPTIBILITY

Based on a 1-9 scale, where

- 3 Low susceptibility
- 5 Medium susceptibility
- 7 High susceptibility

8.1 PESTS

8.1.1 Aphids

8.1.2 Leaf miner

8.1.3 Mites

8.1.4 Nematodes

8.1.5 Pod borer

8.1.6 Other (specify)

8.2 FUNGI

8.2.1 False rust

8.2.2 Pseudo *Cercospora* (leaf spot)

8.2.3 Powdery mildew

8.2.4 Root rot

8.2.5 Wilt

8.2.6 Other (specify)

8.3 BACTERIA

8.4 VIRUS

8.4.1 Mosaic

8.4.2 Leaf curl or little leaf

8.4.3 Other (specify)

9. ALLOENZYME COMPOSITION

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

10. CYTOLOGICAL CHARACTERS AND IDENTIFIED GENES

APPENDIX

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