DESCRIPTORS for SESAME

Cover diagram from Icon. Gen. Plant. ed. S. Endlicher, 1838.

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INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

Descriptors for Sesame

IBPGR Secretariat
Rome, 1981

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

In December 1980, during an FAO Expert Consultation on Sesame Improvement, the IBPGR convened an *ad hoc* Working Group to standardize a list of descriptors which could be recommended for international use for cultivated sesame and the wild species. The participants are shown in Appendix I.

A draft list was prepared by the Secretariat with the help of Professor A. Ashri of the Levi Eshkol School of Agriculture, Israel.

The IBPGR recommends the final list for use in documentation of sesame germplasm. The suggested coding of descriptor states, although conforming to standard germplasm documentation practice, should not be regarded as the only definitive scheme.

Any suggestions for modifications would be welcomed by the IBPGR Secretariat.

DESCRIPTOR LIST FOR SESAME

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 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.

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.

PASSPORT DATA

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 when an accession is lost, its assigned number is still not available for re-use. Letters occur before the number to identify the genebank. Thus Bari, Italy, prefixes its accession number with MG.

1.2 SCIENTIFIC NAME

1.2.1 Species

1.2.2 Subspecies

1.2.3 Varietal name

1.3 DATE OF LAST MULTIPLICATION OR REGENERATION

Year of last multiplication or regeneration

1.4 DONOR NAME

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

1.5 DONOR NUMBER

Accession number assigned by the donor

1.6 ANY OTHER NAME OR NUMBERS ASSOCIATED WITH THE ACCESSION

Not collection number, see 2.2

2. COLLECTION DATA

Data to be recorded when the accession is collected 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. 20 October 1980 as 201080

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 LATITUDE OF COLLECTION SITE

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

2.6 LONGITUDE OF COLLECTION SITE

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

2.7 LOCATION OF COLLECTION SITE

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

2.8 ALTITUDE OF COLLECTION SITE

Elevation above sea level, in metres

2.9 COLLECTION SOURCE

1 Wild
2 Farm land
3 Farm store
4 Backyard
5 Village market
6 Commercial market
7 Institute
8 Other (specify)

2.10 STATUS OF SAMPLE

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

2.11 TYPE OF SAMPLE

1 Pure line
2 Population
3 Single plant

2.12 SOIL pH

2.13 SOIL PHOSPHATE STATUS

2.14 SOIL TEXTURE

1 Clay
2 Loam
3 Sand
4 Silt

2.15 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

3. MORPHOLOGICAL DATA

3.1 SEEDLING

Seedling descriptors are to be recorded one week after germination

3.1.1 Leaf enations

0 Absent
\+ Present

3.1.2 Colour of cotyledons

1 Green
2 Green with white margin

3.1.3 Form of cotyledons

1 Flat
2 Cup shaped

3.1.4 Insertion of cotyledons

1 Sessile
2 Pedicellate

3.1.5 Length of cotyledon

In millimetres

3.1.6 Length of hypocotyledon

In millimetres

3.2 PLANT

3.2.1 Branching habit

1 Non-branching
2 Basal branching
3 Top branching

3.2.2 Colour

Absence or presence of pigments recorded on mature plants, coded as

1 Yellow
2 Green
3 Purple

3.2.3 Stem hairiness

0 Glabrous (absent)
3 Sparse
7 Hairy
9 Very hairy

3.2.4 Stem shape in cross section

See Figure 1

1 Round
2 Square

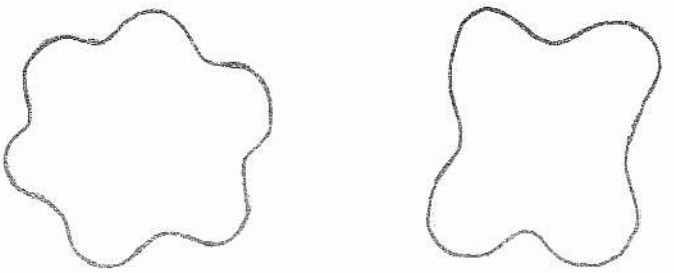

Figure 1: Stem shape in cross section

3.3 LEAF

3.3.1 Leaf colour

Recorded at onset of flowering

1 Green
2 Green with yellowish cast
3 Green with blue-grey cast
4 Green with purple cast

3.3.2 Leaf hairiness

Hairiness of leaf recorded on ventral surface of bottom leaves

0 Glabrous
3 Sparse
7 Hairy
9 Very hairy

3.3.3 Leaf position

1 Opposite
2 Alternate
3 Mixed

3.3.4 Basal leaf shape

1 Entire
2 Lobed

3.3.5 Basal leaf form

1 Flat
2 Cup shaped

3.3.6 Leaf glands

0 Absent
\+ Present

3.3.7 Leaf angle

3 Acute
5 Horizontal
7 Drooping

3.4 FLOWER

3.4.1 Exterior corolla colour

1 White
2 White with violet/purple shading
3 White with deep violet/purple border
4 Violet
5 Purple

3.4.2 Lower lip colour

1 Colourless
2 Coloured

3.4.3 Foveola colour

1 Colourless
2 Yellow

3.4.4 Pollen quantity

Recorded at dehiscence

3 Low
7 High

3.4.5 Style length

1 Exserted
2 Enclosed

3.4.6 Extra-floral nectary development

1 Rudimentary
2 Developed

3.4.7 Corolla hairiness

0 Glabrous
\+ Hairy

3.4.8 Number of flowers per leaf axil

1 One
2 More than one

3.4.9 Number of nodes to first flower

On main stem

3.4.10 Internode length

Mean value from the main stem of 5 plants

3.4.11 Growth

1 Indeterminate
2 Determinate

3.5 FRUIT

Descriptors are recorded on fruits from the middle of the main stem

3.5.1 Capsule length

Mean length in millimetres of three capsules (use middle one in lines with three capsules per axil) from shoulder to shoulder from 5 plants

3.5.2 Capsule shape

See Figure 2

1 Tapered
2 Narrow oblong
3 Broad oblong
4 Square

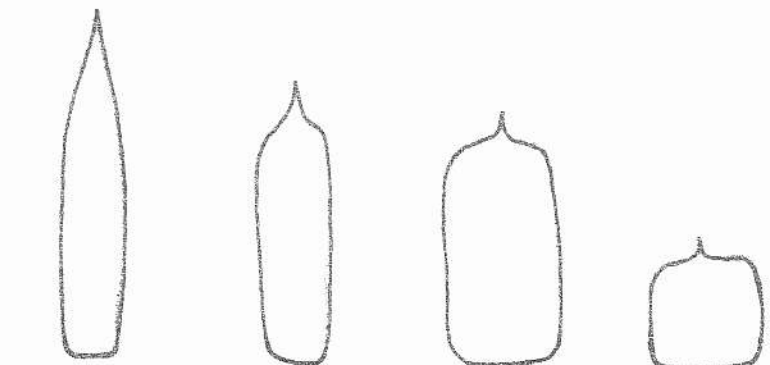

Figure 2: Capsule shape

3.5.3 Number of carpels per capsule

1 Two
2 More than two

3.5.4 Density of capsule hair

0 Glabrous
3 Sparse
7 Profuse

3.5.5 Length of capsule hair

3 Short
7 Long

3.5.6 Colour of dry capsules

1 Straw
2 Brown/tan
3 Purple

3.5.7 Thickness of mesocarp

3 Thin
7 Thick

3.5.8 Seeds per capsule

Mean number of seeds from 3 capsules each of 5 random plants (see 3.5.1)

3.5.9 Shattering in the field

0 Absent
+ Present

3.6 SEED

3.6.1 Seed coat colour

1 White
2 Light brown
3 Brown
4 Reddish brown
5 Grey
6 Black
7 Other (specify)

3.6.2 Seed coat texture

1 Smooth
2 Rough

3.6.3 Seed coat percentage ?

Weight of seed coat as a percentage of seed weight, on a dry weight basis

3.6.4 1000 seed weight

Weight in grams of 1000 random seeds

3.7 ROOTS

1 Fibrous shallow roots
2 Deep tap roots

PRELIMINARY EVALUATION

4. AGRONOMIC EVALUATION DATA

4.1 LOCATION DATA

4.1.1 Site of preliminary evaluation

4.1.2 Planting date

4.1.3 Population density at maturity

Plants per square metre

4.1.4 Spacing between rows

In centimetres, use 0 to specify broadcast seed

4.1.5 Site history

Previous crops, etc.

4.2 DAYS TO EMERGENCE

Number of days from planting or first irrigation to 50% seedling emergence

4.3 DAYS TO 50% FLOWERING

Number of days to 50% of plants having first flower from planting or first irrigation

4.4 DAYS TO PHYSIOLOGICAL MATURITY

Number of days to 75% of plants reaching physiological maturity from date of planting or first irrigation

4.5 PLANT HEIGHT

Mean of 5 random plants from the middle of the plot, in centimetres

4.6 CAPSULES PER PLANT

Mean number of 5 random plants

FULL EVALUATION

5. AGRONOMIC EVALUATION

5.1 LOCATION DATA

5.1.1 Evaluation site

5.1.2 Planting date

5.1.3 Population density at maturity

Plants per square metre

5.1.4 Spacing between rows

In centimetres, use 0 to specify broadcast seed

5.1.5 Site history

5.2 AGRONOMIC DATA

5.2.1 Lodging at maturity

3 Light
5 Intermediate
7 Heavy

5.2.2 Plot yield

In grams per square metre

5.2.3 Plant yield

In grams per plant, from not less than 10 plants

5.2.4 Photosensitivity

Critical day length in hours

6. BIOCHEMICAL DATA

6.1 SEED CHARACTERISTICS

6.1.1 Percentage oil content

Weight of oil expressed/total dry weight of the seed sample, as a percentage

6.1.2 Oil composition

Ratio of oleic-linoleic fatty acids

6.1.3 Oil stability

Percentage of anti-oxidants (sesamin, sesamolin)

6.1.4 Protein content

Percent on dry weight basis

7. DISEASE AND PEST REACTION

These descriptors are recorded on a 1-9 scale, where:

1 Immune
3 Resistant
5 Tolerant
7 Susceptible
9 Lethal

The growth stage, coded according to the list below, at which each reaction was recorded should be appended to the record of that reaction

1 Seed
2 Seedling
3 Pre-flowering
4 Early flowering
5 Mid-flowering
6 Late flowering
7 Maturity

7.1 DISEASE REACTION

7.1.1 Anthracnose (*Colletotrichum* sp.)

7.1.2 Bacterial black rot (*Pseudomonas sesami* Malkoff)

7.1.3 Fusarium wilt (*Fusarium vasinfectum* Atk.)

7.1.4 Leaf spot (*Altenaria* sp.)

7.1.5 Leaf spot (*Cercospora sesami* Zimm.)

7.1.6 Leaf curl (MXO)

7.1.7 Phyllody (*Mycoplasma*)

7.1.8 Phytophtora stem rot (*Phytophtora parasitica* Dastur)

7.1.9 Root and stem rot (*Macrophomina phaseoll* Ashby = *Rhizoctonia bataticola* Butl.)

7.2 INSECT REACTION

7.2.1 Aphids (*Myzus* spp.)

7.2.2 Army worms (*Spodoptera* spp.)

7.2.3 *Cyrtopeltis*

7.2.4 Green vegetable bug (*Nezara viridens*)

7.2.5 Leaf hoppers

7.2.6 Plague locusts

7.2.7 Pod borers (*Heliothis* spp.)

7.2.8 Web rollers (*Antigastra catalaunalis*)

APPENDIX I

PARTICIPANTS IN THE WORKING GROUP

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APPENDIX I
(continued)

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APPENDIX II

COLLECTION RECORD SHEET FOR SESAME AND RELATED SPECIES

Collecting institute:.....

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Collector's name:.....

.....

Collector's number:.....

Map sheet No.:.....Photo No.....

Date:.....

Country:.....

Latitude:.....Longitude.....

Altitude:.....Location:.....

.....

Genus:.....

Species:.....

Subspecies:.....

Collection source:

1 Wild
2 Farm land
3 Farm store
4 Backyard
5 Village market
6 Commercial market
7 Institute
8 Other (specify)

Status of sample:

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

Type of sample:

1 Pure line
2 Population
3 Single plant

Soil pH:.....

Soil phosphate status:.....

Soil texture:

1 Clay
2 Loam
3 Sand
4 Silt

OTHER NOTES:.....

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