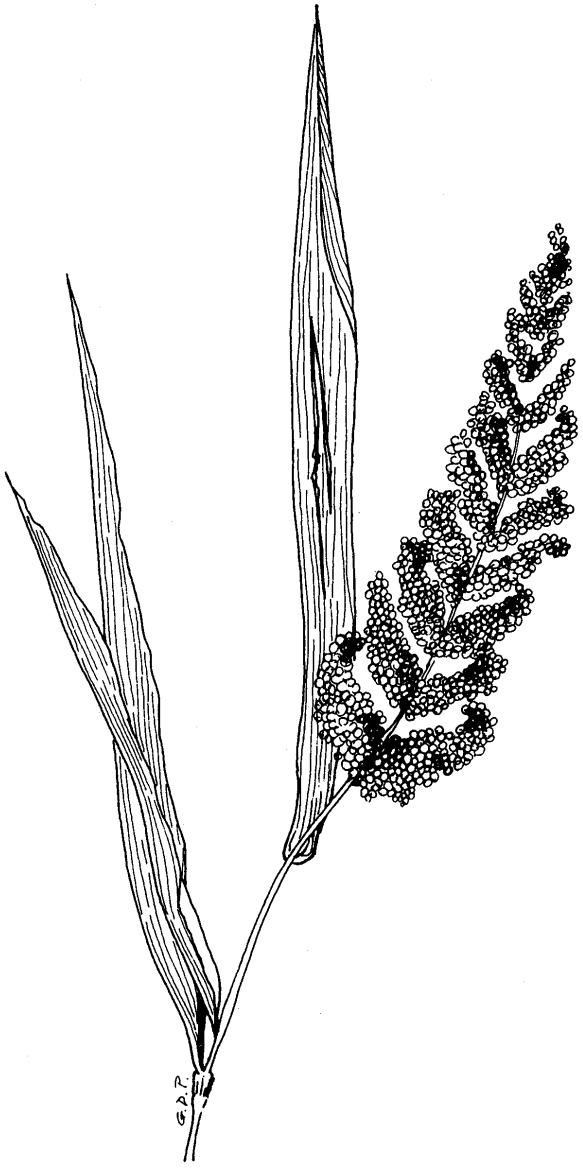

Echinochloa Millet Descriptors

AGPG: IBPGR/82/77
October 1983

INTERNATIONNAL BOARD FOR PLANT GENETIC RESOURCES

ECHINOCHLOA MILLET 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 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.

IBPGR Executive Secretariat
Crop Genetic Resources Centre
Plant Production and Protection Division
Food and Agriculture Organization of the United Nations

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CONTENTS

PREFACE

This descriptors list for *Echinochloa* millets, (*Echinochloa colona* (L.), Link, *E. crus-galli* (L.) Beauv., *E.frumentacea* Link, and *E. utilis* Ohwi ex Yabuno) has been prepared in an IBPGR standard format following advice on descriptors and descriptor states 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 example 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 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 thedescriptors specified; and using the descriptor states recommended.

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

DESCRIPTION LIST FOR *ECHINOCHLOA* MILLETS

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 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 in the Notes descriptor, 11).

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 Inventory 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 at Variety

1.5.5 Cultivated race

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 of accession in collection

1.10 NUMBER OF TIMES ACCESSION REGENERATED
Number of regeneration 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 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 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 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 meters

2.10 COLLECTION SITE

1 Wild
2 Farm Land
3 Farm Store
4 Backyard
5 Village market
6 Commercial market
7 Institute
8 Other (specify in Notes descriptor, 11)

2.11 STATUS OF SAMPLE

1 Wild
2 Weedy
3 Breeders line
4 Primitive cultivar (landrace)
5 Advanced cultivar (bred)
6 Other (specify on 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 PHOTOGRAPHY
Was a photograph taken of the accession or environment at collection? If so provide identification in the Notes descriptor, 11

0 No
1 Yes

2.15 TYPE OF SAMPLE

1 Vegetative
2 Seed
3 Both

2.16 HERBARIUM SPECIMEN
Was a herbarium specimen collected?

0 No
1 Yes

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 INCHARGE 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

1 Erect
2 Decumbent
3 Prostrate

4.1.2 PLANT HEIGHT [cm]

Measured from ground level to tip of inflorescence; in case of decumbent or prostrate plants, length of flowering culm from rooted base

4.1.3 Number of basal tillers

Number of tillers at ground level or from the basal nodes

4.1.4 Degree of culm branching

3 Low branch number (upper one to four nodes rarely branched)
5 Medium branch number (upper two to four nodes produce inflorescences)
7 High branch number (most nodes produce inflorescences)

4.1.5 Degree of lodging at maturity

3 Low
5 Medium
7 High

4.16 Senescence

Degree to which the plant is still green at time the primary inflorescence on each culm (tiller) is reaching maturity

3 Actively growing
7 Dead

4.2 INFLORESCENCE AND FRUIT

4.2.1 **Length of pedicule** [mm]

4.2.2 **Length of inflorescence** [mm]

Measured from the lowest raceme to tip of last raceme

4.2.3 **Number of racemes per inflorescence**

4.2.4 **Colour of inflorescence**

1 Green
2 Light purple
3 Dark purple

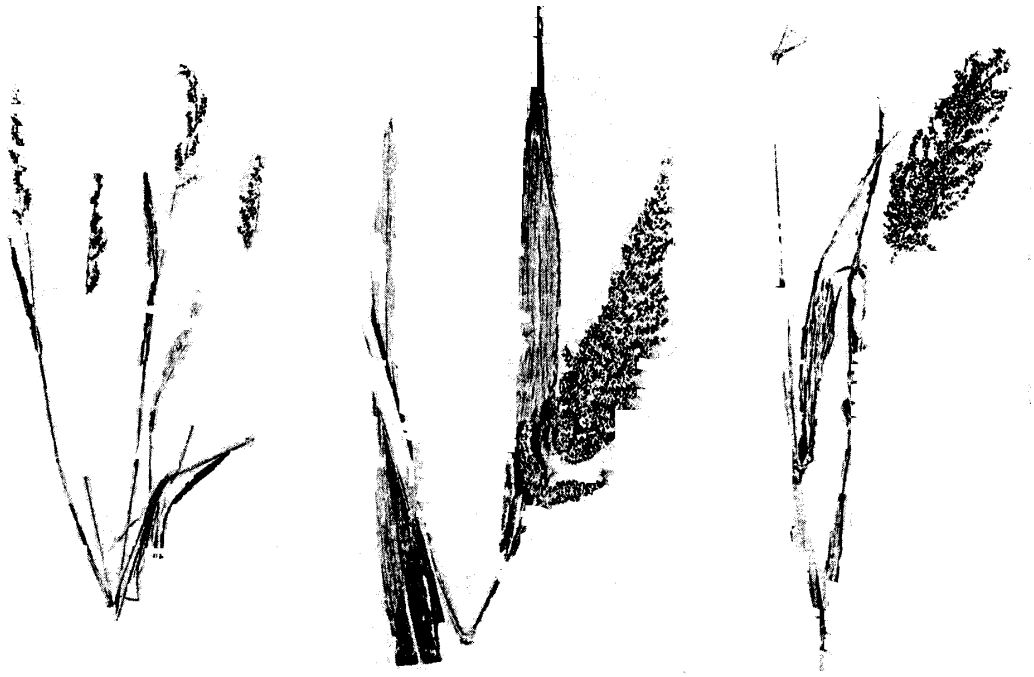
4.2.5 **Days to flowering**

Counted as days from sowing (or first day of rain after planting) to 50% of plants in flower

4.2.6 **Inflorescence shape**

(See figure 1)

1 Cylindrical (racemes more or less appressed to primary Axis)
2 Pyramidal (lower racemes spreading, upper ones ascending)
3 Globose to elliptic (racemes much branched and spreading)



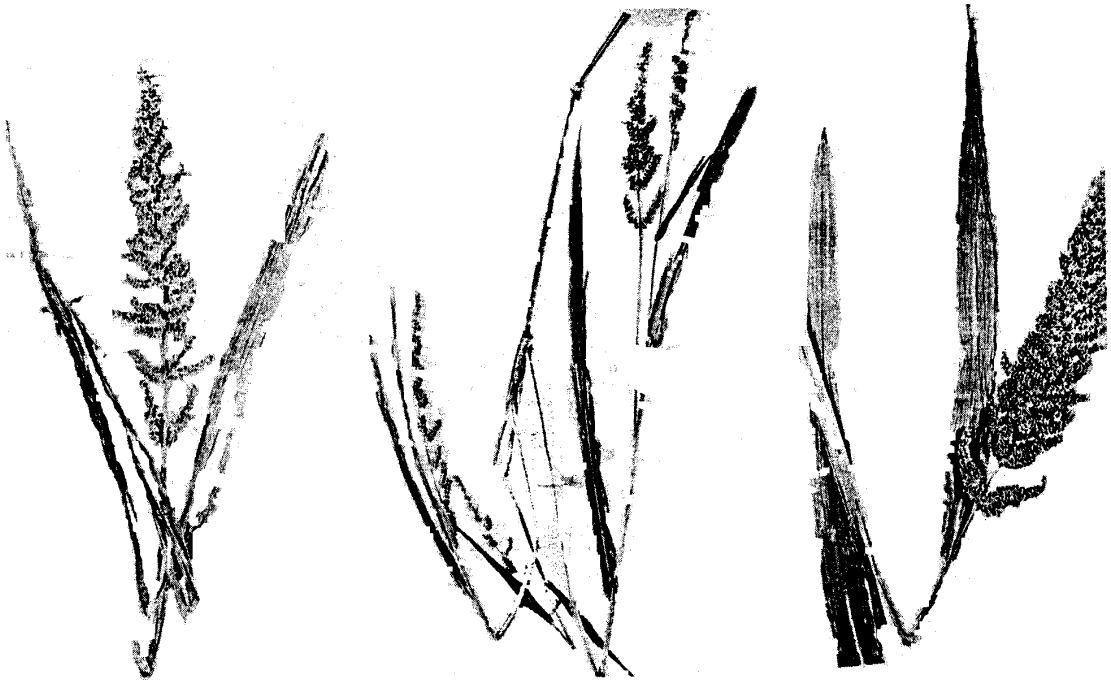
1 Cylindrical **2 Pyramidal** **3 Globose to elliptic**

Fig. 1 Inflorescence shape

4.2.7 Compactness of inflorescence

(See Figure 2)

3	Open
5	Intermediate
7	Compact



3 Open **5 Intermediate** **7 Compact**

Fig. 2 Compactness of inflorescence

4.2.8 Shape of lower racemes

(See Figure 3)

1 Straight (not slender)
2 Curved (not slender)
3 Slender

1 Straight 2 Curved 3 Slender

Fig. 3 Shape of lower racemes

4.29 Length of lower racemes [mm]

4.2.10 Branching of lower racemes

0 Absent
1 Present

4.2.11 Spikelet arrangement

1 On one side or rachis
2 Arranged around rachis

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 SHOWING 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

5.6 SOIL TYPE

5.7 RAINFALL DATA

5.8 PLANT SPACING

6 PLANT DATA

6.1 VEGETATIVE

6.1.1 Blade length of flag leaf [mm]
Measured from ligule to tip

6.1.2 Blade width of flags leaf [mm]
Measured as widest point

6.1.3 Sheath length of flag leaf [mm]
Measured from internode to ligule

6.1.4 Yield of straw for fodder [kg]
Per hectare

6.2 INFLORESCENCE AND FRUIT

6.2.2 Number of nodes per primary axis of inflorescence

6.2.3 Length of inflorescence [mm]

6.2.4 **Width of inflorescence** [mm]

6.2.5 **Shattering of inflorescence** [%]
Percentage of spiklets remaining on racemes at time of full maturity

6.2.6 **Uniformity of population maturity**
Percentage of plants at harvest

6.2.7 **Uniformity of individual plant maturity**
Percentage of inflorescence mature on individual plants at harvest

6.3 SEED

6.3.2 **Yield of grain** [kg]
In kilograms per hectare

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 on a 1 – 9 scale, where

3 Low susceptibility
5 Medium susceptibility
7 High susceptibility

8.1 PESTS

8.1.2 *Amsacta* spp. Caterpillars

8.1.2 *Atherigona* spp. Shoot flies

8.1.3 *Chilo* spp. Borers

8.1.4 *Sesamia* spp. Stem borers

8.1.5 Grasshoppers

8.1.6 Birds

8.1.7 Others (specify in the Notes descriptor, 11)

8.2 FUNGI

8.2.1 *Helminthosporium frumentacei* Mitra — Leaf spot and stripe

8.2.2 *Helminthosporium* monoceras Drecho — Leaf spot/blight

8.2.3 *Sorosporium* (*Tolysposporium) bullatum* Schroet — Seed smut

8.2.4 *Ustilago crus-galli* Tracy & Earle — Smut

8.2.5 *Ustilago panici-frumentacei* Bref. — Smut

8.2.6 *Ustilago paradoxa* Syd. Butler — Kernel smut

8.2.7 Others (specify in the Notes descriptor, 11)

8.3 BACTERIA

8.4 VIRUS

9 ALLEONZYME COMPOSITION

This may rove 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, 8.1.7, etc. Also include here any further relevant information

APPENDIX

LIST OF EXPERTS PROVIDING INPUT TO THE COMPILATION OF THIS LIST

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