

DESCRIPTORS
for
PEARL MILLET

160
m

AGP:IBPGR/80/31
September 1981

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES
(IBPGR)

and

INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS
(ICRISAT)

Pearl Millet Descriptors

IBPGR Secretariat
Rome, 1981

The International Board for Plant Genetic Resources (IBPGR) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) are autonomous, international, scientific organizations under the aegis of the Consultative Group on International Agricultural Research (CGIAR).

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 objectives of ICRISAT are to develop improved farming practices and better varieties of major food crops in order to improve the welfare of the poorest population of the semi-arid tropics, estimated to number about 500 million. ICRISAT reaches the target groups through cooperation with national programmes that are, at present, predominantly in India, but which, increasingly, are elsewhere in the semi-arid tropics.

IBPGR Executive Secretariat
Plant Production and Protection Division
Food and Agriculture Organization of the United Nations
Via delle Terme di Caracalla, 00100 Rome, Italy

ICRISAT
Patancheru P.O.
Andhra Pradesh 502 324
India

© International Board for Plant Genetic Resources,
and International Crops Research Institute for
the Semi-Arid Tropics, 1981

CONTENTS

	<u>Page</u>
PREFACE	v
DESCRIPTOR LIST FOR PEARL MILLET	1
APPENDIX - LIST OF PARTICIPANTS IN WORKING GROUP	33

PREFACE

The Advisory Committee on Sorghum and Millets Genetic Resources, co-sponsored by the IBPGR and ICRISAT, was charged with the development of a list of descriptors for pearl millet (Pennisetum americanum (L.) Leeke). The work was completed in stages, drawing heavily on a preliminary list prepared by Dr. S. Appa Rao and Mr. D.J. Andrews and a later revised list by Messrs. Rao, Andrews and M.H. Mengesha.

A sub-committee was convened by the IBPGR in March 1980 and this met at FAO, Rome. The participants at the meeting of the sub-committee are shown in the Appendix. Subsequently a revised list was circulated to the Advisory Committee and other experts who ensured that the final list represented a consensus of users' opinions.

ICRISAT and the IBPGR recommend this list for documentation and exchange purposes. It should be noted that IBPGR and ICRISAT endorse the descriptors and descriptor states; the suggested coding for descriptor states, although representing a consensus of the experts, should not be regarded as the only definitive scheme.

Any suggestions for modifications will be welcomed by ICRISAT and the IBPGR Secretariat.

DESCRIPTOR LIST FOR PEARL MILLET

The following definitions are now used 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 agronomic traits thought desirable by a consensus of users of the particular crop).

Characterization and preliminary evaluation will be the responsibility of the genebank, while further evaluation should be carried out in collaboration with other specialists. The data from further evaluation should be fed back to the genebank for permanent maintenance in 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 - e.g. EARLY VIGOUR (4.4) could also be coded as:

- 1 Very low
- or
- 6 Intermediate to high

When a characteristic shows substantial variation, a mean value will be recorded with a suffix 'V' for variable.

PASSPORT DATA

1. ACCESSION DATA

1.1 IP NUMBER

Each accession in a pearl millet germplasm bank will be identified by its IP number. This unique number, once assigned, can never be re-assigned to another accession, even when an accession becomes extinct. To avoid duplication, the IEPGR Advisory Committee on Sorghum and Millets authorized ICRISAT to assign this number.

1.2 OTHER NUMBER

Any number assigned by Institutes other than ICRISAT such as "J" number from Jamnagar, NEP number from ALAD

1.3 OTHER NUMBER

- same as 1.2 -

1.4 OTHER NUMBER

- same as 1.2 -

1.5 COMMON/LOCAL NAME AND ETHNIC GROUP

The name given by the farmers to a particular landrace in a region and the name of the ethnic group

1.6 PEDIGREE

Names or codes assigned by crop scientists to a particular accession with parents and breeding synopsis

1.7 DATE OF LAST MULTIPLICATION OR REGENERATION

Month and year of last harvest expressed numerically in four digits, e.g. May 1981 to be expressed 0581

2. COLLECTION DATA

2.1 COLLECTING ORGANIZATION

Name of the organization carrying out the expedition

2.2 COLLECTION SPONSOR

Name of the organization sponsoring collection

2.3 COLLECTOR NAME

Name(s) of the collector(s)

2.4 COLLECTOR NUMBER

Number assigned by the collector(s) at the time of collection. This is alpha-numeric; comprising a two or three letter abbreviation of collector(s) name(s) followed by a number not exceeding five digits, e.g. SAD 00697

2.5 DATE COLLECTED

The date on which a particular accession was collected expressed numerically in six digits, e.g. 5 April 1981 to be expressed as 050481

2.6 DONOR NAME

Name of the person, institution or organization donating a particular accession

2.7 SAMPLE SOURCE

Source from which a sample was obtained

FF	Farmer's field
FS	Farmer's seed sample
TF	Threshing floor
MS	Market sample
IN	Institution
OS	Other source

2.8 ACCESSION TYPE

- AO Authentic indigenous accession, unselected original seed
- CN Authentic indigenous accession, unselected, seed increased by cluster bagging "N" times
- AN Authentic indigenous accession, un-selected, seed increased by selfing "N" times
- SN Initially authentic accession; now sub-divided on a few characters such as head and grain characters, seed increased "N" times
- PN Germplasm pool constituted after mixing different landrace accessions of the same population, e.g. different accessions of "Zongo" are mixed to constitute the "Zongo" population, and seed increased "N" times
- IN Inbred line selfed "N" times
- EB Experimental accession, breeder's line
- UN Unknown, even after attempts were made to identify the type of accession, no information was available

2.9 STATUS AT THE TIME OF COLLECTION

- CV Cultivated
- CS Mostly cultivated types in which shibras ^{1/} occur occasionally
- IF Intermediate between wild and cultivated, shibras
- WS Wild species

2.10 COUNTRY OF ORIGIN

Country from where the accession was first collected. Use the three letter abbreviations supported by the statistical office of the United Nations. Copies of these abbreviations are available from the IBPGR Secretariat

^{1/} A natural cross between the cultivated and wild Pennisetum

2.11 STATE/PROVINCE

2.12 COLLECTION SITE

Number of kilometres and direction from the nearest village or other permanent landmark on the map

2.13 ALTITUDE

Elevation above mean sea level recorded in metres at which a particular accession was collected

2.14 LATITUDE

Latitude of the collection site expressed in degrees and minutes with suffix N or S for north or south respectively, e.g. $12^{\circ}45'$ N

2.15 LONGITUDE

Longitude of the collection site expressed in degrees and minutes with suffix E or W for east or west respectively, e.g. $09^{\circ}20'$ E

2.16 CLIMATE

Climate of the locality from where the particular germ-plasm accession was collected. Troll's classification system for world climates based on broad rainfall groups in relation to potential evapo-transpiration will be used. A humid month is defined as a month with mean rainfall exceeding potential evapo-transpiration. The climate codes are:

- V1 Tropical rainy climates with rainy season of $9\frac{1}{2}$ to 12 humid months and without short interruptions. Evergreen tropical rain forests and half-deciduous transition woods
- V2 Tropical humid-summer climates with 7 to $9\frac{1}{2}$ humid months; rain-green forests and humid grass-savannahs
- V2A Tropical winter-humid climates with 7 to $9\frac{1}{2}$ humid months; half deciduous transition woods

- V3 Wet-dry tropical climates with $4\frac{1}{2}$ to 7 humid months; rain-green dry wood and dry savannah
- V4 Tropical dry climates with 2 to $4\frac{1}{2}$ humid months; tropical thorn-succulent wood and savannah
- V4A Tropical dry climates with humid months in winter
- V5 Tropical semi-desert and desert climates with less than 2 humid months; tropical semi-desert and deserts

2.17 RAINFALL

Classified into four types based on the annual rainfall recorded in millimetres

- 1 less than 450 mm
- 2 451 - 650 mm
- 3 651 - 900 mm
- 4 above 900 mm

2.18 CULTURAL PRACTICES

- 1 Irrigated
- 2 Rainfed
- 3 Flooded
- 4 Transplanted

2.19 CROPPING SYSTEM

- 1 Sole crop
- 2 Inter-crop

2.20 SOIL

- 1 Sandy, sand and loam
- 2 Loam and silt loam
- 3 Clay loam, clay and silt
- 4 Highly organic
- 5 Other (specify)

2.21 TOPOGRAPHY

- 1 Swamp
- 2 Flood plain
- 3 Plain level
- 4 Undulating
- 5 Hilly
- 6 Hilly dissected
- 7 Steeply dissected
- 8 Mountainous
- 9 Other (specify)

2.22 REMARKS

Additional textual information provided by the collector(s) and not covered elsewhere

CHARACTERIZATION

3. MORPHOLOGICAL DATA

Growth stage

DESCRIPTORS AND CODE

(for recording)

3.1 STEM THICKNESS

At harvest

The thickness of the stem in millimetres (without leaf sheaths) between 3rd and 4th node from the top

3.2 SPIKE SHAPE

At maturity

See Figure 1

CYL Cylindrical: spike thickness more or less uniform throughout its length

CON Conical: spike thickness maximum at the base, gradually tapering toward the apex

SPL Spindle: spike thickness maximum in the middle, gradually tapering toward both ends



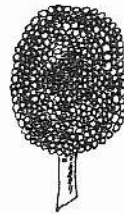
Cylindrical

Conical

Spindle

Club

Candle shape



**Dumb-bell
shape**

Lanceolate

**Oblanceo-
late**

Globose

Figure 1. Spike Shape

Growth stage

- CLB Club: maximum thickness of the spike at the apex, gradually tapering toward base
- CDL Candle shape: intermediate between cylindrical and conical. About $3/4$ length of the spike is cylindrical, gradually tapering toward the apex
- DBL Dumb-bell: the characteristic spike of the Souna type from Mali. Maximum spike thickness is at the base, gradually tapering to $2/3$ of the spike and then increasing slightly
- LNC Lanceolate: intermediate between spindle and conical. Maximum spike thickness is near the middle which tapers more toward the apex than base
- OBL Oblanceolate: the opposite of lanceolate, maximum spike thickness is near the middle which tapers more toward the base
- GLB Globose: almost spherical, spike length not more than twice the diameter

3.3 SPIKELET SHATTERING/THRASHING At maturity

- 1 Spontaneous shattering
- 2 Shattering at touch
- 3 Non-shattering and free thrashing
- 4 Non-shattering and difficult to thrash

3.4 BRISTLE LENGTH At dough stage

- 1 Bristles below the level of the apex of seed
- 5 Bristle length between 0 and 2 centimetres above the seed
- 7 Bristles longer than 2 centimetres above the seed

Growth stage

3.5 SEED COVERING

At maturity

See Figure 2

- 3 Exposed
- 5 Intermediate
- 7 Enclosed

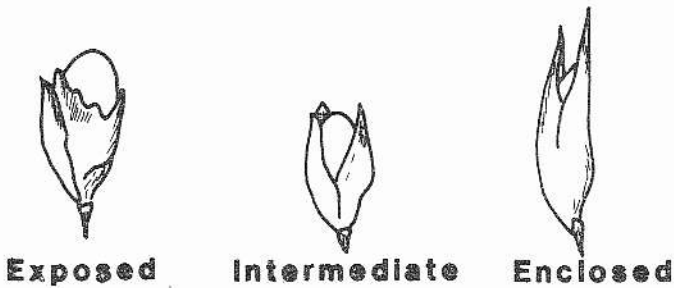


Figure 2. Seed Covering

3.6 SEED SHAPE

See Figure 3

- OB Obovate
- LN Lanceolate
- EL Elliptical
- HG Hexagonal
- GB Globular



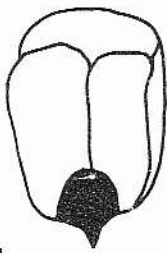
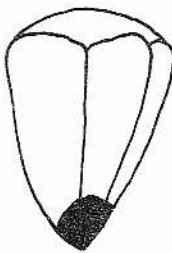
Obovate



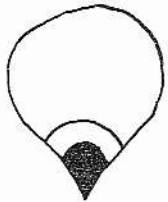
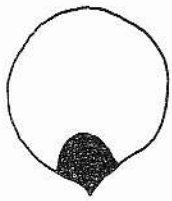
Lanceolate



Elliptical



Hexagonal



Globular

Figure 3. Seed Shape

Growth stage

3.7 SEED COLOUR

Seed colour scored after threshing.
For standard colour identification refer
to Munsell colour chart

IV	Ivory
CM	Cream
YE	Yellow
GR	Gray
DC	Deep gray
GB	Gray brown
BR	Brown
PU	Purple
PB	Purplish black

PRELIMINARY EVALUATION

4. AGRONOMIC EVALUATION DATA

4.1 SITE OF EVALUATION

The name of the site where evaluation was done

4.2 DATE OF PLANTING

The day, month and year on which the accession
was planted, e.g. 15 June, 1981 as 150681

4.3 PLANT DENSITY

Estimated number of plants per m² At maturity

4.4 EARLY VIGOUR

18 days after
emergence

Recorded after thinning to avoid the
effect of plant number

3	Low
5	Intermediate
7	High

		<u>Growth stage</u>
4.5	<u>TILLERING</u>	
4.5.1	<u>Tillering attitude</u>	At head emergence
	3 ^{1/} Erect (cylindrical)	
	5 Intermediate	
	7 Spreading	
4.5.2	<u>Total tillers</u>	At maturity
	The total number of mature and immature spikes at the time of harvest. Any culm, including the main stem, having a spike is considered as a tiller	
4.5.3	<u>Productive tillers</u>	At maturity
	The number of spikes which bear seed at the time of harvest and therefore contribute to yield. Immature spikes are not counted	
4.5.4	<u>Nodal tillers</u>	At maturity
	0 None	
	3 Few	
	7 Many	
4.6	<u>DAYS TO FLOWERING</u>	At flowering
	Number of days from field emergence to when 50 per cent of the plants flowered. Stigma emergence on the main spike is considered as flowering	

1/ ICRISAT uses E,I,S for the coding

Growth stage

- 4.7 FLOWERING RANGE At flowering
- SF Short, continuous flowering,
duration less than 7 days
- LF Long, continuous flowering,
duration more than 7 days
- DF Discontinuous flowering, two or
more groups flowering
- 4.8 SYNCHRONY OF EAR MATURITY At harvest
- N Non-synchronous
- S Synchronous
- 4.9 RESTORATION RESPONSE (Cytoplasmic male sterility A-1 type) At harvest
- 1 Non-restoration (maintainer)
- 2 Partial restoration (all plants shed poor pollen)
- 3 Complete restoration
- 4 Segregating for restoration
- 4.10 GREEN FODDER YIELD POTENTIAL At flowering
- Consider tillering, leafiness and bulk
- 3 Poor
- 5 Intermediate
- 7 Good
- 4.11 PLANT HEIGHT At dough stage
- Measured in centimetres from the ground level to the tip of the spike
- 4.12 EAR EXsertION At maturity
- Observations taken on the primary tiller in centimetres. It is recorded as the

Growth stage

distance between the ligule of the flag leaf and the base of the spike

NEN Negative exertion, N centimetres

PEN Positive exertion, N centimetres

4.13 SPIKE At dough stage

4.13.1 Spike length

Measured in centimetres from the base to the tip of the spike on the primary tiller

4.13.2 Spike thickness At dough stage

Maximum diameter of the spike, excluding bristles, measured in millimetres

4.13.3 Spike density At maturity

3 Loose
5 Intermediate
7 Compact

4.14 SEED

4.14.1 Seed weight per spike Post-harvest

Weight of the seed in grams at 12 per cent moisture content

4.14.2 Seed weight Post-harvest

Weight of 1000 seeds in grams at 12 per cent moisture content

4.14.3 Seed volume Post-harvest

Volume of 1000 seeds expressed in cubic centimetres using alcohol

- 4.20 SENSITIVITY TO PHOTOPERIOD Growth stage
At flowering

In respect of flowering being influenced
by length of day

- 3 Highly sensitive
- 5 Partly sensitive
- 7 Insensitive

FURTHER CHARACTERIZATION AND EVALUATION

5. FURTHER CHARACTERIZATION

5.1 SITE OF EVALUATION

The name of the site where evaluation was done

5.2 DATE OF PLANTING

The day, month and year on which the accession
was planted, e.g. 8 June 1981 as 080681

5.3 LEAF

5.3.1 Length At head emergence

The measurement in centimetres
from ligule to tip of the leaf
on the 4th node below the head
on the main tiller

5.3.2 Width At head emergence

The measurement in millimetres
taken at the widest point of the
leaf on the 4th node of the main
tiller

		<u>Growth stage</u>
5.3.3	<u>Attitude</u>	At head emergence
	1 Erect	
	5 Intermediate	
	9 Pendant	
5.3.4	<u>Colour</u>	At head emergence
	1 Light green	
	5 Green	
	7 Dark green	
5.3.5	<u>Sheath length</u>	At head emergence
	The measurement in centimetres taken from the node to the base of the ligule of the leaf on the 4th node below the head of the main stem	
5.3.6	<u>Sheath pigmentation</u>	At dough stage
	1 Green	
	5 Red	
	7 Purple	
5.3.7	<u>Blade pigmentation</u>	At dough stage
	1 Green	
	5 Red	
	7 Purple	
5.3.8	<u>Sheath pubescence</u>	At head emergence
	1 Glabrous	
	5 Sparsely hairy	
	7 Densely hairy	
5.3.9	<u>Senescence</u>	At maturity
	3 Slow	
	5 Intermediate	
	7 Fast	

		<u>Growth stage</u>
5.3.10	<u>Separation</u>	At dough stage
	The distance (in centimetres) between two successive (3rd and 5th) leaf blades, ligule to ligule divided by two	
5.3.11	<u>Number</u>	At maturity
	3	Low
	5	Intermediate
	7	High
5.4	STEM	
5.4.1	<u>Internode length</u>	At harvest
	The distance (in centimetres) between 3rd and 4th node	
5.4.2	<u>Stalk juiciness</u>	At dough stage
	0 ^{1/} Absent	
	+ Present	
5.4.3	<u>Juice quality</u>	At dough stage
	3	Insipid
	5	Intermediate
	7	Sweet
5.4.4	<u>Node pigmentation</u>	At dough stage
	3	Light
	5	Intermediate
	7	Dark

- | | | <u>Growth stage</u> |
|-------|--|---------------------|
| 5.4.5 | <u>Internode pigmentation</u> | At dough stage |
| | 3 Light | |
| | 5 Intermediate | |
| | 7 Dark | |
| 5.4.6 | <u>Node pubescence</u> | At flowering |
| | 0 ^{1/} Absent | |
| | + Present | |
| 5.4.7 | <u>Internode pubescence</u> | At flowering |
| | 0 ^{1/} Absent | |
| | + Present | |
| 5.5 | RACHIS | |
| 5.5.1 | <u>Rachis diameter</u> | At maturity |
| | A measurement in millimetres
taken at mid-point of the rachis | |
| 5.5.2 | <u>Rachis pubescence</u> | At maturity |
| | 3 Sparse | |
| | 5 Intermediate | |
| | 7 Dense | |
| 5.5.3 | <u>Rachis tip</u> | At maturity |
| | E Exposed | |
| | C Covered | |
| 5.6 | INVOLUCRE | |
| 5.6.1 | <u>Stalk length</u> | At maturity |
| | A measurement in millimetres of
the involucre stalk at mid-point
of the rachis | |

- | | | <u>Growth stage</u> |
|-------|--|---------------------|
| 5.6.2 | <u>Number of fertile spikelets per involucre</u> | At maturity |
| | Average number recorded at the middle of the spike | |
| 5.6.3 | <u>Bristle colour</u> | At dough stage |
| | 3 Green | |
| | 5 Tan (Brown) | |
| | 7 Red | |
| 5.6.4 | <u>Bristle ornamentation</u> | At maturity |
| | See Figure 4 | |
| | 1 Scabrous (rough) | |
| | 2 Ciliate (with fine hairs) | |
| | 3 Plumose (feathery) | |

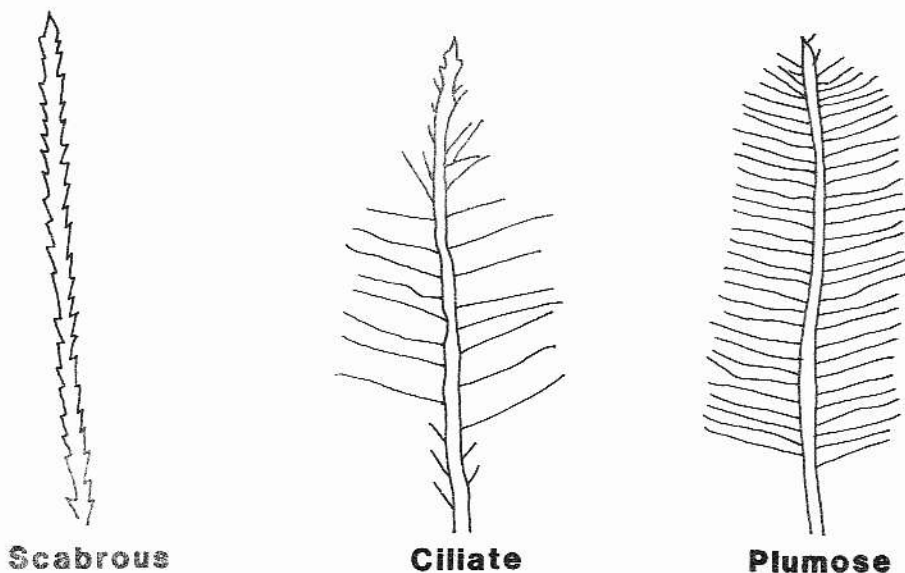


Figure 4. Bristle Colour

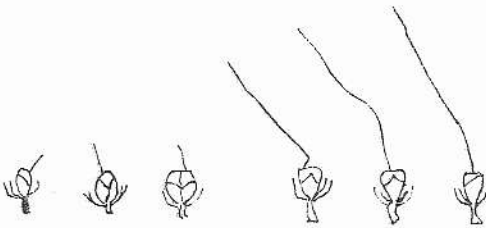
Growth stage

5.6.5 Type of aristation

At maturity

See Figure 5

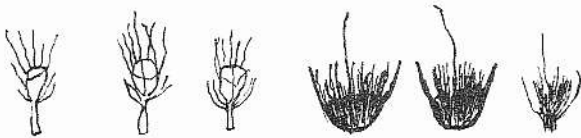
- 1 Mono-aristation - short
- 3 Mono-aristation - long
- 5 Poly-aristation - sparse
- 7 Poly-aristation - dense



Mono-aristation

short

long



Poly-aristation

sparse

dense

Figure 5. Types of Aristation

		<u>Growth stage</u>
5.7	SPIKELET	
5.7.1	<u>Glume colour</u>	At dough stage
	3 Light	
	5 Intermediate	
	7 Dark	
5.7.2	<u>Anther colour</u>	Before anther dehiscence
	1 Cream	
	3 Cream yellow	
	5 Yellow	
	7 Brown	
	9 Purple	
5.7.3	<u>Stigma pigmentation</u>	At flowering
	1 ^{1/} Absent	
	2 Present	
5.7.4	<u>Florets per spikelet</u>	At stigma emergence
	Number and types of florets per spikelet at mid-point of the rachis (with dissection of the florets)	
	1 One perfect floret only	
	3 Two florets: one perfect	
	5 Two florets: one perfect + one male	
	7 Two florets: 2 perfect	
	9 More than two perfect florets	

1/ ICRISAT uses A and P for the coding

		<u>Growth stage</u>
5.8	<u>SEED</u>	
5.8.1	<u>Apex shape</u>	Post-harvest
	1 Non-mucronate	
	2 Mucronate	
5.8.2	<u>Surface</u>	Post-harvest
	S Smooth	
	W Wrinkled	
6.	<u>FURTHER EVALUATION</u>	
6.1	<u>GRAIN QUALITY</u>	
6.1.1	<u>Protein content</u>	Post-harvest
	Per cent of dry matter	
6.1.2	<u>Lysine content</u>	Post-harvest
	Per cent of dry matter	
6.1.3	<u>Methionine content</u>	Post-harvest
	Per cent of dry matter	
6.1.4	<u>Tryptophane content</u>	Post-harvest
	Per cent of dry matter	
6.2	<u>DROUGHT TOLERANCE</u>	
	3 Low tolerance	
	5 Medium tolerance	
	7 High tolerance	

6.3 RHIZOSPHERE NITROGENASE ACTIVITY

- 3 ^{1/}Low
- 5 Intermediate
- 7 High

6.4 TEMPERATURE TOLERANCE

- 3 Low tolerance
- 5 Medium tolerance
- 7 High tolerance

6.5 SALINITY TOLERANCE

- 3 Low tolerance
- 5 Medium tolerance
- 7 High tolerance

6.6 ENZYME AND PROTEIN PATTERN

(Future task)

6.7 STRIGA RESISTANCE

6.7.1 Striga asiatica (L.) O. Kuntze

- 3 Low
- 5 Medium
- 7 High

6.7.2 Striga hermonthica Benth.

- 3 Low
- 5 Medium
- 7 High

^{1/} ICRISAT uses L, M and H for the coding

7. DISEASE SUSCEPTIBILITY EVALUATION DATA

Disease susceptibility scores should only be made from designed trials with check varieties

7.1 SITE OF EVALUATION

The name of the site where evaluation was done

7.2 DATE OF PLANTING

The day, month and year on which the accession was planted for evaluation, i.e. 15 June 1981 as 150681

7.3 DOWNY MILDEW

At dough stage

(Sclerospora graminicola (Sacc.) Schroet.)

- 1 No symptoms
- 2 Symptoms on nodal tillers only
- 3 Symptoms on main tiller but still more than 50% heads normal
- 4 Symptoms on so many main tillers that there are less than 50% normal tillers
- 5 Symptoms on so many main stems and tillers that there are no productive heads. (Plants may have died at an earlier stage leaving clumps of straw or gaps)

7.4 ERGOT

At dough stage

(Claviceps fusiformis (Lov.))

Record mean per cent infected florets from ten heads with the aid of the standard drawings. (See Figure 6)

- 1 No symptoms
- 2 Less than 5% of grain become sclerotic
- 3 6-10% of grain become sclerotic
- 4 11-20% of grain become sclerotic
- 5 More than 20% of grain become sclerotic

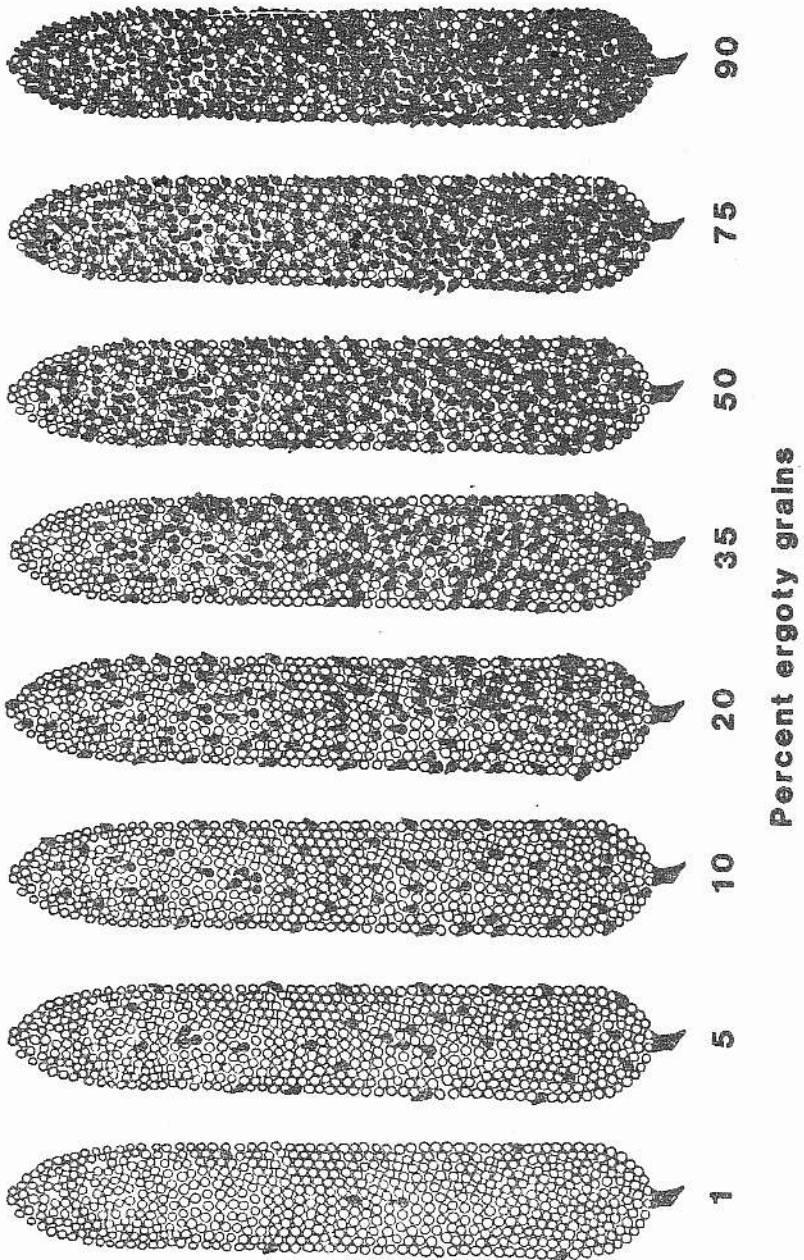


Figure 6. Ergot

Growth stage

7.5 SMUT
(Tolyposporium penicillariae (Bref.))

At dough stage

Record the mean per cent infected florets on 10 bagged/inoculated heads with the aid of the standard drawings. (See Figure 7)

- 1 No symptoms
- 2 Less than 5% of grain become smut sori
- 3 6-10% of grain become smut sori
- 4 11-20% of grain become smut sori
- 5 More than 20% of grain become smut sori

7.6 RUST
(Puccinia penniseti Zimm.)

At flowering

Assess the top four leaves at 50% flowering and indicate whether infection also occurs on the sheaths by using an additional suffix, S if necessary

- 1 No symptoms
- 2 Few scattered pustules
- 3 Pustules up to 10% of leaf surface
- 4 Pustules covering 11-25% of leaf surface
- 5 Pustules covering more than 25% of leaf surface

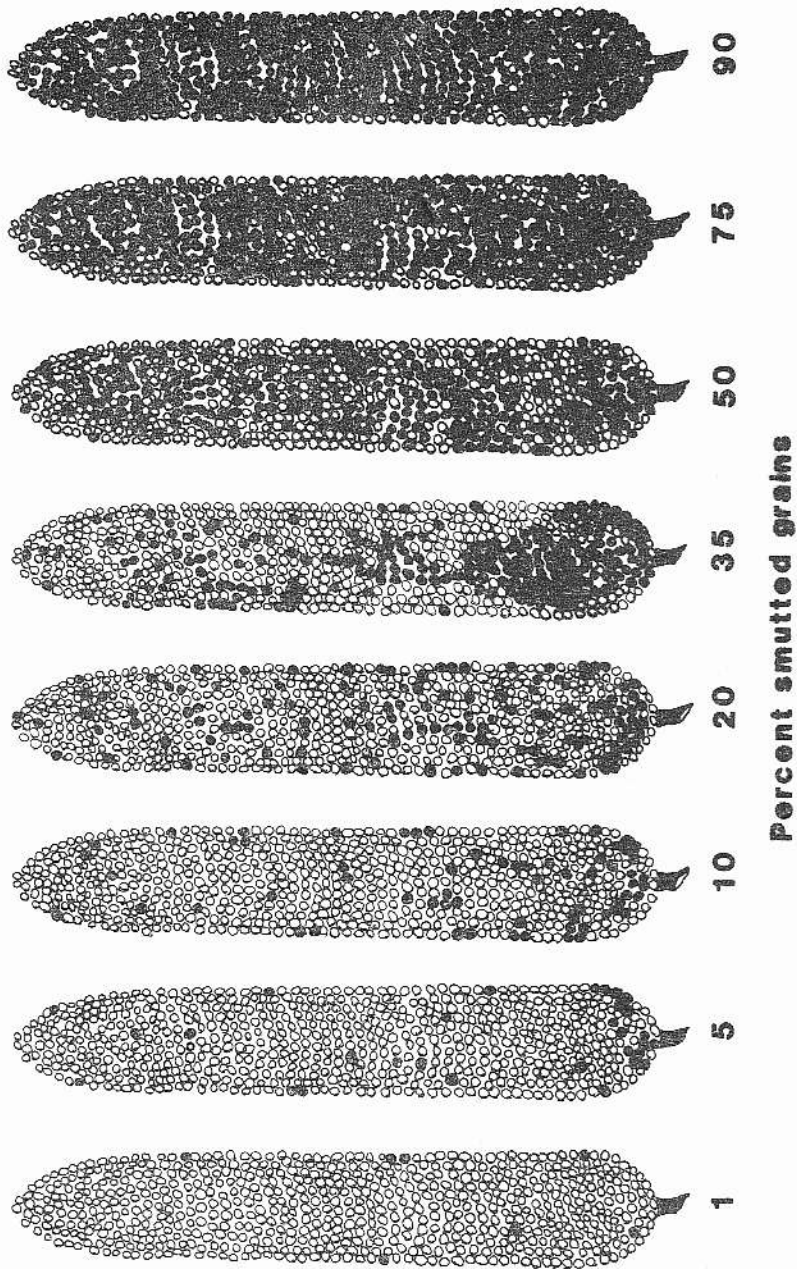


Figure 7. Smut

8. PEST SUSCEPTIBILITY EVALUATION DATA

Pest susceptibility scores should only be made from designated trails with relevant check varieties.

Insect damage scores are recorded on a 1 to 9 scale, where:

- 3 Damage less than that shown by the check
- 5 Damage approximately equal to that shown by the check
- 7 Damage greater than that shown by the check

8.1 SITE OF EVALUATION

The name of the site where evaluation was done

8.2 DATE OF PLANTING

The day, month and year on which the accession was planted for evaluation i.e.
20 July 1981 as 200781

8.3 WHITE GRUBS

8.3.1 Holotrichia sp.

8.3.2 Other (Specify)

8.4 SHOOT FLY

8.4.1 Atherigona approximata

8.4.2 Other (Specify)

8.5 STEM BORERS

8.5.1 Chilo partellus

8.5.2 Sesamia inferens

8.5.3 Acigona ignefusalis

8.5.4 Other (specify)

8.6 HAIRY CATERPILLARS

8.6.1 Amsacta sp.

8.6.2 Estigmene lactinea

8.6.3 Other (specify)

8.7 ARMY WORMS

8.7.1 Mythimna sp.

8.7.2 Spodoptera exempta

8.7.3 Spodoptera frugiperda

8.7.4 Other (specify)

8.8 CUT WORMS

8.8.1 Agrotis sp.

8.8.2 Other (specify)

8.9 GRASS HOPPERS

8.10 APHIDS

8.10.1 Rhopalosiphum maidis

8.10.2 Schizaphis graminum

8.10.3 Other (specify)

8.11 LEAF EATING WEEVILS/BEETLES

8.11.1 Myllocerus sp.

8.11.2 Tanymecus indicus

8.11.3 Oulema downsei

8.11.4 Other (specify)

8.12 MIDGE

8.12.1 Geromyia penniseti

8.13 HEAD BUGS

8.13.1 Calocoris angustatus

8.13.2 Dysdercus sp.

8.13.3 Other (specify)

8.14 HEAD CATERPILLARS

8.14.1 Masalia sp.

8.14.2 Heliothis armigera

8.14.3 Cryptoblabes gnidiella

8.14.4 Raghuva sp.

8.14.5 Other (specify)

8.15 BLISTER BEETLES

8.15.1 Mylabris pustulata

8.15.2 Psalydolytta sp.

8.16 THRIPS

8.16.1 Haplothrips sp.

8.16.2 Thrips sp.

8.17 BIRDS

APPENDIX

PARTICIPANTS

Mr. D.J. Andrews	Leader, Pearl millet programme ICRISAT Patancheru P.O. Andhra Pradesh 502324 India
Dr. N. Murthi Anishetty	Assistant Executive Secretary, IBPGR Plant Production and Protection Division FAO Rome, Italy
Dr. S. Appa Rao	Botanist - Genetic Resources ICRISAT Patancheru P.O. Andhra Pradesh 502324 India
Mr. W.G. Ayad	Consultant, IBPGR Plant Production and Protection Division FAO Rome, Italy
Prof. A. Bilquez	5, rue Victor Hugo B.P. 1638 Dakar Senegal
Mr. J.C. Clément	ORSTOM 24, rue Bayard Paris 8 France

APPENDIX
(Continued)

Dr. M.H. Mengesha

Programme Leader,
Genetic Resources Unit
ICRISAT
Patancheru P.O.
Andhra Pradesh 502 324
India

Dr. J. Pernes

ORSTOM,
24, rue Bayard
Paris 8
France

Dr. J.T. Williams

Executive Secretary, IBPGR,
Plant Production and Protection
Division
FAO
Rome,
Italy