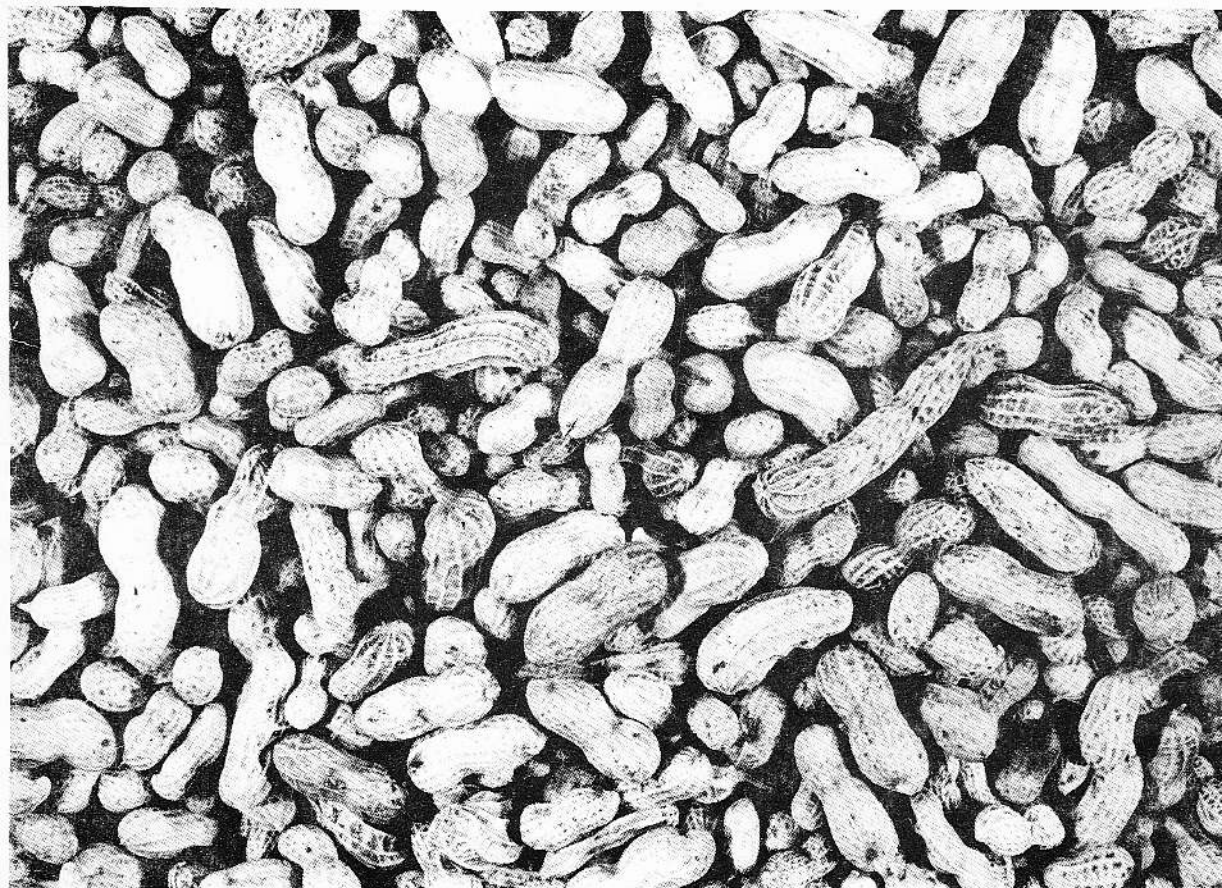




# GROUNDNUT



# DESCRIPTORS

100  
m

ACP:IBPGR/80/66  
September 1981

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES  
(IBPGR)

and

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

Groundnut 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.

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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 502324  
India

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International Crops Research Institute for the Semi-  
Arid Tropics, 1981

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PREFACE

The IBPGR convened a Working Group to develop an internationally-agreed upon list of descriptors for Arachis species in Richmond, Virginia, USA 14-15 July 1980. The members of the Group are shown in the Appendix.

The initial list of descriptors was developed by Dr. V. Ramanatha Rao of the Genetic Resources Unit, ICRISAT, in discussion with Prof. A.H. Bunting, University of Reading, UK and Mr. R.W. Gibbons, Programme Leader, Groundnut Improvement Programme ICRISAT. The list was further expanded in 1978 at the Information Sciences and Genetic Resources Program, University of Colorado, Boulder, USA. The Working Group finalized these descriptors and the IBPGR and ICRISAT recommend this list for use in documentation and exchange of genetic resources. The suggested coding, although representing a consensus of the experts, should not be regarded as the only definitive scheme.

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

DESCRIPTOR LIST FOR GROUNDNUT

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 traits thought desirable by a consensus of users of the particular crop).

Characterization and preliminary evaluation will be the responsibility of the genetic resources scientists, while further evaluation should be carried out by concerned crop improvement scientists. The data from further evaluation should be fed back to the genebank which 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 using values between them e.g. Stem hairiness (4.2.3) could also be recorded as:

1           Very scarce

or

9           Very abundant

PASSPORT DATA

1. ACCESSION DATA

1.1 ACCESSION NUMBER

This number serves as a unique identifier for accessions and is assigned by the genebank when an accession is entered into the 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. ICRISAT prefixes its numbers with the letters ICG.

1.2 ICG NUMBER

A unique identifier assigned by ICRISAT

1.3 SYNONYM NUMBER 1

Number assigned by the other agencies/centres, such as PI number; EC number; RCM number, etc.

1.4 SYNONYM NUMBER 2

1.5 SYNONYM NUMBER 3

1.6 SYNONYM NUMBER 4

1.7 GENUS

1.8 SPECIES

1.9 SUB-SPECIES

1.10 BOTANICAL VARIETY

1.11 CULTIVAR

Name or number given to the accession

1.12 PEDIGREE



1.13 BREEDING YEAR

Year in which the accession was developed or released

1.14 COUNTRY OF BREEDING

Country in which the experimental station is located. Use the three letter abbreviations supported by the Statistical Office of the United Nations. Copies of these abbreviations are available from the IBPGR Secretariat

1.15 EXPERIMENTAL STATION

Name of the experimental station where the accession was developed

2. COLLECTION DATA

Data to be recorded when the accession is collected in the field

2.1 COLLECTING INSTITUTION

Institution sponsoring the collection of the original sample

2.2 COLLECTOR'S NAME

Name(s) of the collector(s)

2.3 COLLECTOR NUMBER

Original number assigned by collector of the sample

2.4 COLLECTION DATE

Date of collection of original sample expressed as day/month/year, e.g. 10 February 1981 as 100281

2.5 SAMPLE SOURCE

- 1 Field
- 2 Local market
- 3 Farm store
- 4 Agricultural institute
- 5 Other (specify)

2.6 DONOR NAME

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

2.7 COUNTRY OF ORIGIN

Use the three letter abbreviations supported by the Statistical Office of the United Nations. Copies of these abbreviations are available from the IBPGR Secretariat

2.8 PROVINCE/STATE

Name of administrative subdivision of the country of collection

2.9 COLLECTION SITE

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

2.10 LATITUDE

Latitude of collection site recorded in degrees and minutes followed by N or S, e.g. 10°30'S

2.11 LONGITUDE

Longitude of collection site recorded in degrees and minutes followed by E or W, e.g. 76°25'W

2.12 ALTITUDE

Elevation above sea level of collection site in metres

2.13 SAMPLE SIZE

- 1 Single plant
- 2 Population (>1 plant)
- 3 Unknown

2.14 SAMPLE TYPE

- 1 Original collection, cultivated
- 2 Original collection, wild
- 3 Sub-sample of original collection, cultivated
- 4 Sub-sample of original collection, wild
- 5 Breeding line
- 6 Others

2.15 LOCAL NAME

Vernacular name given to the accession in the area of collection

2.16 ETHNIC GROUP

Name of the tribe of the people living in the area of collection

2.17 SOIL TYPE

Description of soil type by the collector

2.18 OTHER NOTES FROM COLLECTOR

Additional information recorded by the collector

CHARACTERIZATION AND PRELIMINARY EVALUATION

3. GENERAL

3.1 SITE OF CHARACTERIZATION AND PRELIMINARY EVALUATION

3.2 EVALUATOR(S) NAME AND ADDRESS

3.3 PLANTING DATE

Expressed as day/month/year, e.g. 5 March 1981 as  
050381

3.4 HARVESTING DATE

Expressed as day/month/year, e.g. 10 September 1981  
as 100981

4. CHARACTERIZATION

4.1 GROSS MORPHOLOGY

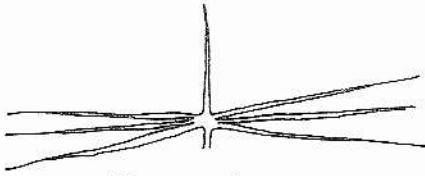
4.1.1 Life form

- 1 Annual
- 2 Perennial
- 3 Unknown

4.1.2 Growth habit

See Figure 1

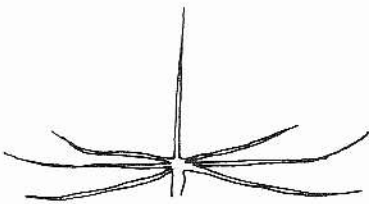
- 1 Procumbent-1
- 2 Procumbent-2
- 3 Decumbent-1
- 4 Decumbent-2
- 5 Decumbent-3
- 6 Erect
- 7 Other



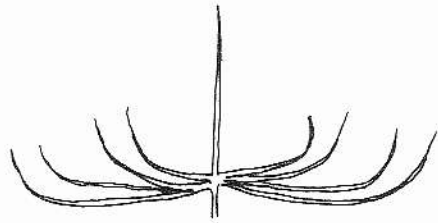
Procumbent-1



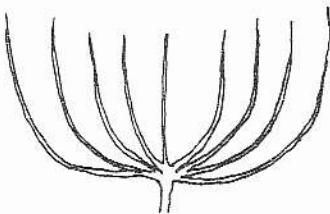
Procumbent-2



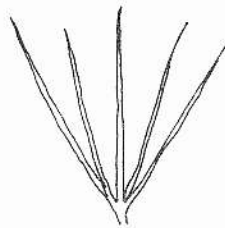
Decumbent-1



Decumbent-2



Decumbent-3



Erect

Figure 1. Growth habit

4.2 STEM

4.2.1 Branching pattern

Determined on (n+1) cotyledonary lateral branch. See Figure 2

- 1 Alternate
- 2 Sequential
- 3 Irregular with flowers on main stem
- 4 Irregular without flowers on main stem
- 5 Other

4.2.2 Stem pigmentation

Of mature plant

- 1 Absent
- 2 Present

4.2.3 Stem hairiness

Recorded on the main axis

- 3 Scarce
- 7 Abundant

4.2.4 Lateral branch habit

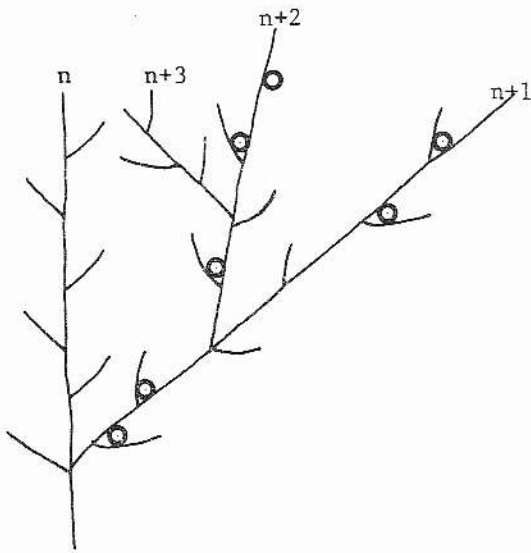
- 1 Non-distichous
- 2 Distichous

4.3 INFLORESCENCE

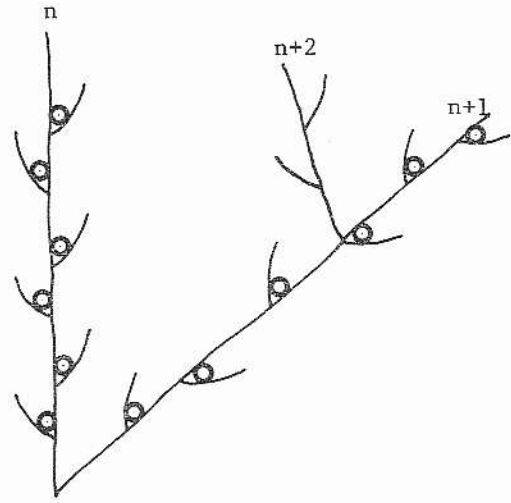
4.3.1 Length of reproductive branch

Recorded at the time of 50% flowering on cotyledonary lateral branch in centimetres

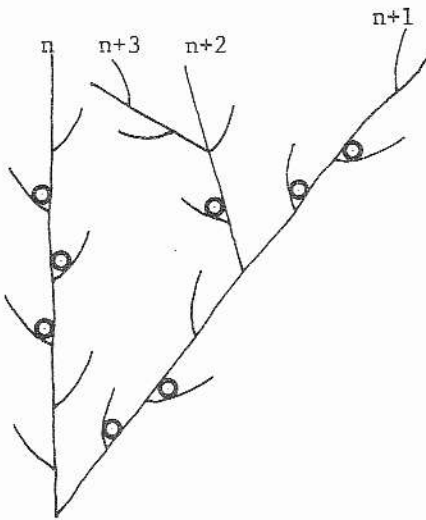
- 1 < 1
- 2 1-5
- 3 6-10
- 4 > 10



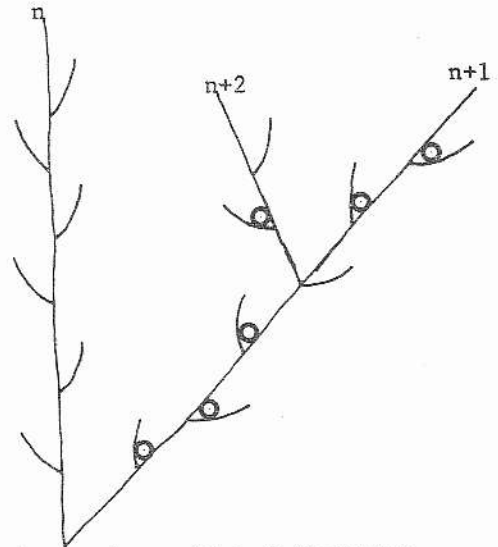
Alternate



Sequential



Irregular with flowers  
on main stem



Irregular without flowers  
on main stem

○ Reproductive Branch

Figure 2. Branching pattern

4.3.2 Number of flowers per inflorescence

Recorded at the time of 50% flowering on cotyledonary lateral branch

1 1-3

2 4-5

3 > 5

4.3.3 Peg colour

1 Absent

2 Present

4.4 FLOWER

4.4.1 Standard petal colour

Basic colour of front face of standard petal. Recorded on fresh, fully opened flowers. Royal Horticultural Society (RHS) colour charts to be used

4.4.2 Standard petal markings

Colour of the markings on the standard petal, recorded on the front face. RHS colour charts to be used

4.5 LEAF

4.5.1 Leaf colour

Colour of fully expanded leaf. RHS colour charts to be used

4.5.2 Leaflet length

Length of fully expanded apical leaflet, mean of 10 leaflets, in millimetres

4.5.3 Leaflet width

Width of fully expanded apical leaflet, measured at mid point, mean of 10 leaflets in millimetres

4.5.4 Length/width ratio

Leaflet length/width ratio

4.5.5 Leaflet shape

Shape of fully expanded leaflet on the main axis and apical leaflet

- 1 Cuneate
- 2 Obtuse
- 3 Elliptic
- 4 Lanceolate
- 5 Other

4.5.6 Hairiness of young leaflets

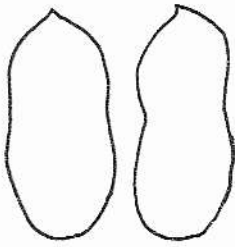
Hairiness of terminal leaflets recorded on ventral surface

- 1 Almost glabrous
- 2 Sparse and short
- 3 Sparse and long
- 4 Profuse and short
- 5 Profuse and long
- 6 Other

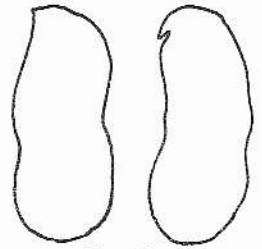
4.5.7 Hairiness of mature leaflets

Hairiness of fully expanded leaflets, recorded on ventral surface

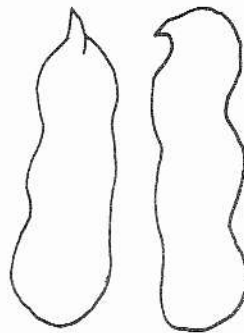
- 1 Almost glabrous
- 2 Sparse and short
- 3 Sparse and long
- 4 Profuse and short
- 5 Profuse and long
- 6 Other



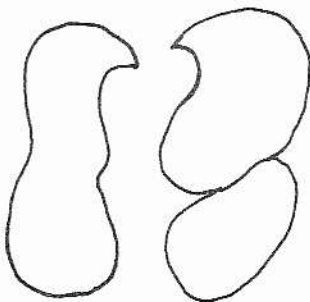
Absent



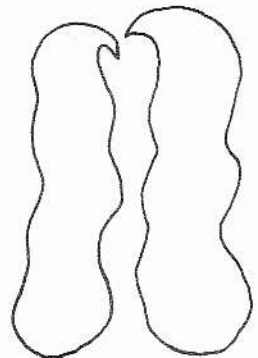
Slight



Moderate



Prominent



Very prominent

Figure 3. Pod beak

4.6 FRUIT

4.6.1 Number of seeds/pod

Number of seeds per pod, and average estimate with first number indicating the most frequent number of seeds per pod, second indicating the second most frequent number of seeds per pod, etc.

- 1 2-1
- 2 2-1-3
- 3 2-3-1
- 4 2-3-4-1
- 5 2-4-3-1
- 6 3-2-4-1
- 7 3-4-2-1
- 8 3-4-2-1
- 9 Other

4.6.2 Pod beak

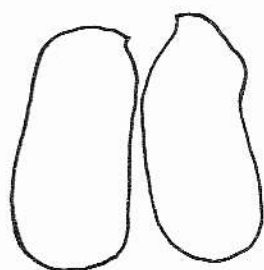
See Figure 3

- 1 Absent
- 3 Slight
- 5 Moderate
- 7 Prominent
- 9 Other

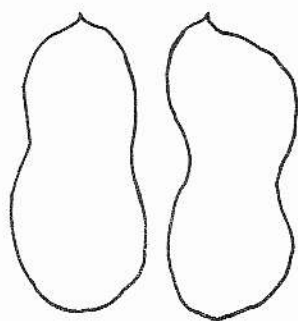
4.6.3 Pod constriction

See Figure 4

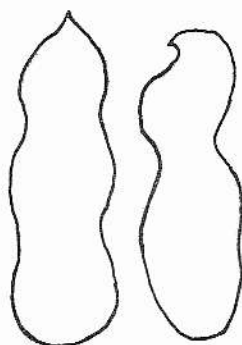
- 0 None
- 3 Slight
- 5 Moderate
- 7 Deep
- 9 Very deep



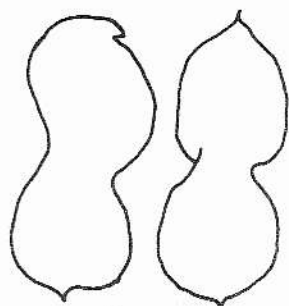
**None**



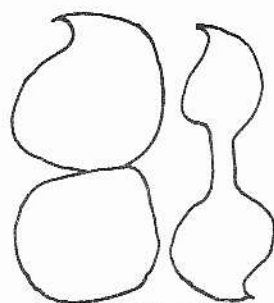
**Slight**



**Moderate**



**Deep**



**Very deep**

Figure 4. Pod constriction

4.6.4 Pod reticulation

- 0 Smooth
- 3 Slight
- 5 Moderate
- 7 Prominent
- 9 Other

4.6.5 Pod length

Length of pod in millimetres, mean of 10 mature pods

4.6.6 Pod width

Width (diameter) at the widest point in millimetres, mean of 10 mature pods

4.7 SEED

4.7.1 Seed colour

- 1 One colour
- 2 Variegated

4.7.2 Primary seed colour

Primary or major colour of the seed recorded within one month of harvest after complete drying. RHS colour charts to be used

4.7.3 Secondary seed colour

Secondary or minor colour on the variegated seed. RHS colour charts to be used

4.7.4 Seed length

Length of the seed in millimetres, average of 10 mature seeds

4.7.5 Seed width

Width (diameter) of the seed in millimetres measured in the mid point, average of 10 mature seeds

4.7.6 Seed weight

Weight of 100 random seeds in grams

5. PRELIMINARY EVALUATION

5.1 MATURITY

5.1.1 Days to emergence

Number of days to emergence from planting or first irrigation

5.1.2 Days to 50% flowering

Number of days to 50% flowering from emergence

5.1.3 Days to maturity

Number of days to maturity from emergence

1	< 90
2	91-100
3	101-110
4	111-120
5	121-130
6	131-140
7	141-150
8	151-160
9	>160

5.1.4 Fresh seed dormancy

Percentage of germination immediately after harvest and number of days to 70% germination, e.g. 65/12 for 65% germination and 12 days for reaching 70% germination

5.1.5 Seed dormancy

Percentage of germination of dried seed 14 days after harvesting and number of days to 70% germination (recorded as 5.1.4)

5.2 YIELD COMPONENTS

5.2.1 Shelling percentage

Based on weight of mature seed at 8% moisture/  
total weight of pod samples x 100

5.2.2 Yield

Expressed in grams per square metre

FURTHER EVALUATION

6. BIOCHEMICAL DATA

6.1 OIL CHARACTERISTICS

6.1.1 Oil content

Percentage of oil based on weight of oil  
expressed/total dry weight of the seed sample

6.1.2 Oil quality

Ratio of oleic-linoleic fatty acids

7. PHYSIOLOGICAL DATA

These are coded on a susceptibility scale from 1 to 9  
viz.:

1	Very low
3	Low
5	Intermediate
7	High
9	Very high

- 7.1 REACTION TO DROUGHT
- 7.2 REACTION TO SALINITY
- 7.3 REACTION TO MINERAL DEFICIENCIES

- 7.3.1 Iron
- 7.3.2 Phosphorus
- 7.3.3 Potassium
- 7.3.4 Manganese
- 7.3.5 Calcium
- 7.3.6 Molybdenum
- 7.3.7 Zinc
- 7.3.8 Aluminium
- 7.3.9 Nitrogen
- 7.3.10 Sulphur
- 7.3.11 Magnesium

- 7.4 REACTION TO MINERAL TOXICITIES

- 7.4.1 Zinc
- 7.4.2 Aluminium

## 8. MICROBIOLOGICAL DATA

- 8.1 NODULATION CAPACITY

- 0 No nodules
- 3 Few nodules
- 7 Abundant nodules

9. DISEASE AND PEST SUSCEPTIBILITY

These are coded on a susceptibility scale from 1 to 9 viz.:

1	Very low
3	Low
5	Intermediate
7	High
9	Very high

9.1 FOLIAR DISEASES

- 9.1.1 Alternariosis (Alternaria alternata)
- 9.1.2 Early leaf spot (Cercospora arachidicola)
- 9.1.3 Late leaf spot (Cercosporidium personatum)
- 9.1.4 Pepper spot (Leptosphaerulina crassiasca)
- 9.1.5 Rust (Puccinia arachidis)
- 9.1.6 Scab (Sphaceloma arachidis)

9.2 SEED AND SEEDLING DISEASES

- 9.2.1 Collar rot (Aspergillus niger)
- 9.2.2 Crown rot (Aspergillus niger and A. flavus)
- 9.2.3 Pythium rot (Pythium myriotyium)
- 9.2.4 Seed rot (Aspergillus flavus)
- 9.2.5 Seedling rot (Fusarium spp.

Macrophomina phaseolina

Rhizoctonia solani

Sclerotium rolfsii)

9.3 ROOT AND STEM ROT

9.3.1 Bacterial wilt (Pseudomonas solanacearum)

9.3.2 Black rot (Cylindrocladium sp.)

9.3.3 Root rot (Fusarium spp.

Macrophomina phaseolina

Rhizoctonia solani

Sclerotium rolfsii)

9.3.4 Stem rot (Sclerotium rolfsii)

9.4 POD ROT

9.4.1 Black rot (Cylindrocladium sp.)

9.4.2 Fusarium oxysporum

9.4.3 Fusarium solani

9.4.4 Macrophomina phaseolina

9.4.5 Pythium myriotylum

9.4.6 Rhizoctonia solani

9.5 VIRAL AND MYCOPLASMA DISEASES

9.5.1 Groundnut rosette

9.5.2 Groundnut stunt

9.5.3 Peanut clump

9.5.4 Peanut mottle

9.5.5 Tomato spotted wilt virus (bud necrosis)

9.5.6 Witches broom (mycoplasma)

9.6 FOLIAGE AND STEM FEEDING INSECTS

9.6.1 Aphids (Aphis craccivora)

9.6.2 Jassids (Empoasca sp.)

9.6.3 Thrips (Frankliniella spp.)

Scirtothrips dorsalis

Caliothrips indicus

Enniothrips flavens)

9.6.4 Other hemipteran pests (Nezara viridula

Hilda patruelis)

9.6.5 Amsacta spp. (A. albistriga

A. morrei)

9.6.6 Aproaerema modicella (Stomopteryx subsecivella)

9.6.7 Heliothis (H. armigera

H. peltigera

H. zea

H. virescens)

9.6.8 Spodoptera spp. (S. litura

S. littoralis

S. frugiperda

S. exigua)

9.6.9 Other lepidopterous pests (Anticarsia gemmatilis

Stegasta basqueella

Chrysodeixis chalcites)

9.7 FLOWER FEEDING INSECTS

9.7.1 Heliothis armigera

9.7.2 Thrips (Frankliniella spp.

Megalurothrips distalis

Taeneothrips spp.)

9.8 ROOT AND POD FEEDING INSECTS

9.8.1 Pod borers (Elasmopalpus lignocellus [lesser  
cornstalk borer]

Diabrotica undecimpunctata howardii)

9.8.2 Termites (Odontotermes obesus

Microtermes spp.)

9.9 OTHER ORTHOPOD PESTS

9.9.1 Mites (Paraplonobia spp.

Pentlalens spp.

Tetranychus spp.)

9.10 NEMATODES

9.10.1 Aphelenchoides arachidis (testa nematode)

9.10.2 Belonolaimus sp. (sting nematode)

9.10.3 Meloidogyne spp. (root knot nematode)

9.10.4 Pratylenchus sp. (lesion nematode)

9.10.5 Xiphinema sp. (dagger nematode)

APPENDIX

PARTICIPANTS

Mr. R.W. Gibbons	ICRISAT Patancheru P.O. Andhra Pradesh 502 324 India
Prof. W.C. Gregory	Dept. of Crop Science University of North Carolina Box 5155 Raleigh, NC 27650 USA
Dr. Ray O. Hammons	Crops Research Unit USDA-SEA P.O. Box 748 Tifton, GA 31794 USA
Dr. A. Krapovickas	Facultad de Agronomia Universidad Nacional del Nordeste Sargente Cabral 2139 Corrientes Argentina
Dr. V. Ramanatha Rao	ICRISAT Patancheru P.O. Andhra Pradesh 502 324 India
Dr. J.T. Williams	Executive Secretary IBPGR Plant Production and Protection Division Food and Agriculture Organization of the United Nations (FAO) Via delle Terme di Caracalla 00100 Rome Italy