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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

# TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS

## Thirty-First Session
## Rio de Janeiro, Brazil, September 23 to 27, 2002

WORKING PAPER ON DRAFT TEST GUIDELINES FOR MEDICS (EXCLUDING *M. SATIVA)*

*Document prepared by experts from South Africa*

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## I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Medicago* spp., excluding *Medicago sativa* L.

## II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. Unless the competent authorities make an exception, the seed to be supplied for each examination must originate from the preceding growing season. The minimum quantity of seed to be supplied by the applicant in one or several samples should be

1,5 kg

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing certified seed in the country in which the application is made. The germination capacity should be as high as possible.

2. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## III. Conduct of Tests

1. The minimum duration of tests should normally be two independent growing cycles.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The field tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include, per growing period, at least 60 spaced plants and may in addition include 10 metres of row.

(a) Plots with spaced plants: Each test should consist of 60 single spaced plants per variety arranged in 3 to 6 replicates, i.e. 20, 15, 12 or 10 plants. More replicates are generally more efficient when fewer varieties are included in the test.

(b) Row plots: Each test which includes row plots should consist of at least 10 metres of row arranged in 2 replicates, each of 5 metres. The density of sowing should be such that about 200 plants per metre should be obtained.

Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

## IV. Methods and Observations

1. Unless otherwise stated, all observations for assessment of distinctness, uniformity and stability should be made on 60 plants or parts taken from each of 60 plants.

The variability within the variety should not exceed the variability of comparable varieties already known.

2. Characteristics should be measured so that a mean value per plot can be obtained: from these data a standard deviation per variety can be derived and the data submitted to a 'two-way' analysis of variance. The significance of measured differences should be taken into account for assessing distinctness and the preparation of descriptions.

3. For the assessment of distinctness of a variety, the mean values for each characteristic should be compared with those for other varieties using a recognized statistical technique.

4. For the assessment of uniformity of a variety and the inference of its stability, the standard deviation of the mean value for each characteristic should be compared with the mean of the standard deviations of comparable varieties using a recognized statistical technique.

5. All observations on leaf markings should be made at the beginning of flowering (10% of plants with at least one flower). Most of the markings tend to fade or disappear after flowering, when temperatures rise.

6. Unless otherwise indicated, all observations on the leaf should be made on the central leaflet of fully developed leaves on the middle third of a representative runner at the 50% flowering stage (50% of plants with at least one flower).

7. All observations on the flowers should be made 2 weeks after 50% flowering.

8. All observations on the burr should be made on fully mature senesced plants.

## V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties within the particular species:

(a) Leaflet: presence of markings (characteristic 10)
(b) Leaflet: type of markings on upper side (characteristic 11)
(c) Leaflet: pubescence (characteristic 15)
(d) Burr: texture of coil edges (characteristic 27)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend

(*) Characteristics that should be used on all varieties in every growing period over which examinations are made and should always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

(+) See Explanations on the Table of Characteristics in Chapter VIII.

1) The letters indicate the following:

M: actual measurement
C: calculation of values
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observations of a number of individual plants or parts of plants

VII. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

| | Stage [1] / Stade [1] / Stadium [1] / Estado [1] | English | français | deutsch | español | Example Varieties / Exemples / Beispielssorten / Variedades ejemplo | Note/ Nota |
|---|---|---|---|---|---|---|---|
| **1.** | **VG** | **Plant: vigor** | | | | | |
| | | weak | | | | | 3 |
| | | medium | | | | | 5 |
| | | strong | | | | | 7 |
| **2.** | **VG** | **Plant: growth habit** | | | | | |
| | | semi-upright | | | | | 3 |
| | | medium | | | | | 5 |
| | | prostrate | | | | | 7 |
| | | decumbent | | | | | 9 |
| **3.** | **VS** | **Plant: pubescence on runner** | | | | | |
| | | sparse | | | | | 3 |
| | | medium | | | | | 5 |
| | | dense | | | | | 7 |
| **4.** | **M** | **Leaflet: length** | | | | | |
| | | very short | | | | | 1 |
| | | short | | | | | 3 |
| | | medium | | | | | 5 |
| | | long | | | | | 7 |
| | | very long | | | | | 9 |
| **5.** | **M** | **Leaflet: width** | | | | | |
| | | very narrow | | | | | 1 |
| | | narrow | | | | | 3 |
| | | medium | | | | | 5 |
| | | broad | | | | | 7 |
| | | very broad | | | | | 9 |

| | Stage [1)]<br>Stade [1)]<br>Stadium [1)]<br>Estado [1)] | English | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|---|
| **6.** | **C** | **Leaflet: ratio length/width** | | | | | |
| | | small | | | | | 3 |
| | | medium | | | | | 5 |
| | | large | | | | | 7 |
| **7.** | **VS** | **Leaflet: position of maximum width** | | | | | |
| | | below middle | | | | | 3 |
| | | middle | | | | | 5 |
| | | above middle | | | | | 7 |
| **8.**<br>**(+)** | **VS** | **Leaflet: shape of base** | | | | | |
| | | acute | | | | | 3 |
| | | obtuse | | | | | 5 |
| | | straight | | | | | 7 |
| **9.**<br>**(+)** | **VS** | **Leaflet: shape of apex** | | | | | |
| | | acute | | | | | 3 |
| | | right angle | | | | | 5 |
| | | obtuse | | | | | 7 |
| **10.**<br>**(*)** | **VS** | **Leaflet: presence of markings** | | | | | |
| | | absent both sides | | | | | 1 |
| | | present upper side | | | | | 2 |
| | | present lower side | | | | | 3 |
| | | present both sides | | | | | 4 |

| | Stage [1)]<br>Stade [1)]<br>Stadium [1)]<br>Estado [1)] | English | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|---|
| **11.**<br>**(*)**<br>**(+)** | **VS** | **Leaflet: type of markings on upper side** | | | | | |
| | | diffuse spots | | | | | 1 |
| | | central mark | | | | | 2 |
| | | central watermark | | | | | 3 |
| | | mark at petiole junction | | | | | 4 |
| | | watermark at petiole junction | | | | | 5 |
| **12.** | **VS** | **Varieties with spots: Leaflet: amount of spots on upper side** | | | | | |
| | | absent or very few | | | | | 1 |
| | | few | | | | | 3 |
| | | medium | | | | | 5 |
| | | many | | | | | 7 |
| **13.** | **VS** | **Leaflet: spots on lower side** | | | | | |
| | | absent or very few | | | | | 1 |
| | | few | | | | | 3 |
| | | medium | | | | | 5 |
| | | many | | | | | 9 |
| **14.** | **VS** | **Leaflet: serration of margin** | | | | | |
| | | absent | | | | | 1 |
| | | fine | | | | | 3 |
| | | medium | | | | | 5 |
| | | coarse | | | | | 7 |

| | Stage [1)]<br>Stade [1)]<br>Stadium [1)]<br>Estado [1)] | English | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|---|
| **15.**<br>**(*)** | **VS** | **Leaflet: pubescence** | | | | | |
| | | absent both sides | | | | | 1 |
| | | present upper side | | | | | 2 |
| | | present lower side | | | | | 3 |
| | | present both sides | | | | | 4 |
| **16.** | **M** | **Petiole: length** | | | | | |
| | | short | | | | | 3 |
| | | medium | | | | | 5 |
| | | long | | | | | 7 |
| **17.** | **VS** | **Petiole: thickness** | | | | | |
| | | thin | | | | | 3 |
| | | medium | | | | | 5 |
| | | thick | | | | | 7 |
| **18.**<br>**(+)** | **VS** | **Stipule: size** | | | | | |
| | | very small | | | | | 1 |
| | | small | | | | | 3 |
| | | medium | | | | | 5 |
| | | large | | | | | 7 |
| | | very large | | | | | 9 |
| **19.** | **VS** | **Stipule: length of teeth** | | | | | |
| | | short | | | | | 3 |
| | | medium | | | | | 5 |
| | | long | | | | | 7 |

| | Stage [1)]<br>Stade [1)]<br>Stadium [1)]<br>Estado [1)] | English | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|---|
| **20.**<br>**(+)** | **VS** | **Flower: marking on calyx tube** | | | | | |
| | | absent | | | | | 1 |
| | | present | | | | | 9 |
| **21.** | **VS** | **Flower: color of marking on calyx tube** | | | | | |
| | | green | | | | | 1 |
| | | blackish | | | | | 2 |
| **22.** | **VG** | **Burr: size** | | | | | |
| | | small | | | | | 3 |
| | | medium | | | | | 5 |
| | | large | | | | | 7 |
| **23.**<br>**(*)**<br>**(+)** | **VG** | **Burr: shape** | | | | | |
| | | disk-shaped | | | | | 1 |
| | | globular | | | | | 2 |
| | | cylindrical | | | | | 3 |
| | | cup-shaped | | | | | 4 |
| **24.** | **VS** | **Burr: compactness of coils** | | | | | |
| | | loose | | | | | 3 |
| | | medium | | | | | 5 |
| | | dense | | | | | 7 |
| **25.**<br>**(+)** | **VS** | **Burr: direction of coiling** | | | | | |
| | | anti-clockwise | | | | | 1 |
| | | clockwise | | | | | 2 |

| | Stage [1)]<br>Stade [1)]<br>Stadium [1)]<br>Estado [1)] | English | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|---|
| **26.** | **VS** | **Burr: number of spirals** | | | | | |
| | | less than three | | | | | 1 |
| | | three to five | | | | | 2 |
| | | more than five | | | | | 3 |
| **27.**<br>**(*)** | **VS** | **Burr: texture of coil edges** | | | | | |
| | | smooth | | | | | 3 |
| | | rough | | | | | 5 |
| | | spined | | | | | 7 |
| **28.** | **VS** | **Burr: length of spines** | | | | | |
| | | short | | | | | 3 |
| | | medium | | | | | 5 |
| | | long | | | | | 7 |
| **29.**<br>**(+)** | **VS** | **Burr: attitude of spines** | | | | | |
| | | adpressed | | | | | 1 |
| | | oblique | | | | | 2 |
| | | perpendicular | | | | | 3 |
| **30.** | **VS** | **Burr: presence of apical hook on spines** | | | | | |
| | | absent | | | | | 1 |
| | | present | | | | | 9 |

| | Stage [1)]<br>Stade [1)] English<br>Stadium [1)]<br>Estado [1)] | français | deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|---|---|---|---|---|
| **31.**<br>**(*)**<br>**(+)** | **VS** | **Time of flowering** | | | | |
| | very early | | | | | 1 |
| | early | | | | | 3 |
| | medium | | | | | 5 |
| | late | | | | | 7 |
| | very late | | | | | 9 |
| **32.**<br>**(+)** | **VS** | **Time of physiological ripening of burrs** | | | | |
| | early | | | | | 3 |
| | medium | | | | | 5 |
| | late | | | | | 7 |

VIII. Explanations on the Table of Characteristics

Ad. 8: Leaflet: shape of base

Ad. 9: Leaflet: shape of apex

Ad. 11: Leaflet: type of markings on upper side

Ad. 18: Stipule: size

All observations on the stipule should be made on stipules on the middle third of a representative runner.

Ad. 20: Flower: marking on calyx tube

Ad. 23: Burr: shape

Ad. 25: Burr: direction of coiling

Burrs should be examined looking at the apex. If the apical tip coils in the direction of a clocks hands' movement, the coiling is clockwise. If the apical tip points to the opposite direction, the coiling is anti-clockwise.

Ad. 29: Burr: attitude of spines

Ad. 31: Time of flowering

Time of flowering is reached when 50% of the plants have at least one open flower.

Ad. 32: Time of physiological ripening of burrs

Time of physiological ripening is when the burrs have reached full maturity and 50% of the plant has started to dry.

IX. Literature

– Lesins, K.A. & Lesins, I. 1979. Genus Medicago (Leguminosae) A Taxogenetic study.

– IBPGR. Rome. 1991. Descriptors for annual *Medicago.*

- Small, E.; Jomphe, M. 1989. A synopsis of the Genus *Medicago* (Leguminosae). Canadian Journal of Botany 67:3260-3294

X. Technical Questionnaire

| | |
|---|---|
| | Reference Number<br>(not to be filled in by the applicant) |
| | |

TECHNICAL QUESTIONNAIRE

To be completed in connection with an application for plant breeders' rights

| | | |
|---|---|---|
| 1. | Genus | *Medicago* L. (excluding *M. sativa* L.)<br>MEDICS |
| 1.2 | Species (please indicate): | …….. |

| | |
|---|---|
| 2. | Applicant (Name and address) |

| | |
|---|---|
| 3. | Proposed denomination or breeder's reference |

4. Information on origin, maintenance and reproduction of the variety

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

| Characteristics | Example Varieties | Note |
|---|---|---|
| **5.2 (10) Leaflet: presence of markings** | | |
| absent both sides | | 1[ ] |
| present upper side | | 2[ ] |
| present lower side | | 3[ ] |
| present both sides | | 4[ ] |
| **5.3 (11) Leaflet: type of markings on <u>upper side</u>** | | |
| diffuse spots | | 1[ ] |
| central mark | | 2[ ] |
| central watermark | | 3[ ] |
| mark at petiole junction | | 4[ ] |
| watermark at petiole junction | | 5[ ] |
| **5.4 (15) Leaflet: pubescence** | | |
| absent both sides | | 1[ ] |
| present upper side | | 2[ ] |
| present lower side | | 3[ ] |
| present both sides | | 4[ ] |

| | Characteristics | Example Varieties | Note |
|---|---|---|---|
| **5.5 (23)** | **Burr: shape** | | |
| | disk-shaped | | 1[ ] |
| | globular | | 2[ ] |
| | cylindrical | | 3[ ] |
| | cup-shaped | | 4[ ] |
| **5.6 (27)** | **Burr: texture of coil edges** | | |
| | smooth | | 1[ ] |
| | ridged | | 2[ ] |
| | spined | | 3[ ] |
| **5.1 (31)** | **Time of flowering** | | |
| | very early | | 1[ ] |
| | early | | 3[ ] |
| | medium | | 5[ ] |
| | late | | 7[ ] |
| | very late | | 9[ ] |

6. Similar varieties and differences from these varieties

| Denomination of similar variety | Characteristic in which the similar variety is different o) | State of expression of similar variety | State of expression of candidate variety |
|---|---|---|---|

o) In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

8. Authorization for release

(a) Does the variety require prior authorization for the release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to that question is yes, please attach a copy of such an authorization.

[End of document]