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**INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS**

**UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES**

**INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN**

**UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES**

DRAFT

**GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

RED CLOVER
(Trifolium pratense L.)

These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Trifolium pratense* 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. The minimum quantity of seed to be supplied by the applicant in one or several samples should be:

1.0 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. As a minimum, each test at each testing place should include per growing period:

(a) Row plots

3000 plants (density about 450 plants per m²) which should be divided between two replicates

(b) Plots with single spaced plants

60 single spaced plants which should be divided between three replicates.

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 of each of the 60 plants in case of single spaced plants
- on a minimum of 1500 plants in case of row plots.

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

2. Interpretation of results should be made according to the rule of cross-pollinated varieties as stated in the General Introduction to the Test Guidelines.

3. All measurements on the leaf should be made within 1 to 2 weeks after the mean date of flowering on the third leaf of the main stem from the top.

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:

Ploidy (characteristic 2).

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 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) To be observed on A = spaced plants
 B = row plots
 C = special tests

M = actual measurement.

MS = measurements of a number of individual plants or parts of plants.

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.

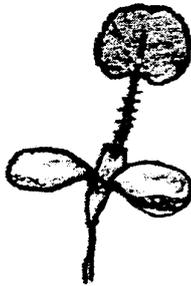
VIII. Explanations on the Table of Characteristics

Ad. 2: Ploidy

Ploidy should be assessed on at least 100 seedlings.

Ad. 3 and 4: Cotyledon: length (3), width (4)

The observation should be made 12-14 days after sowing in greenhouse, when the first leaf is fully developed. If the two cotyledons differ in size, the biggest one should be measured.

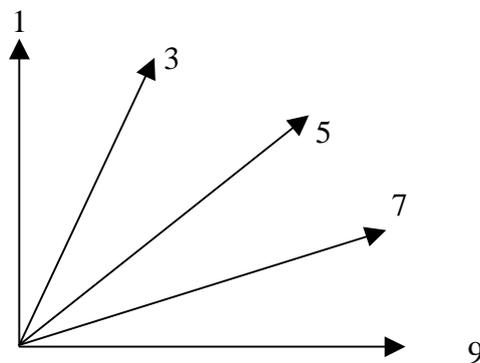


Ad. 5 and 6: Plant: natural height in the year of sowing (5); Leaf: color in the year of sowing (6)

The observation should be made 4 to 5 weeks after the reduction cut.

Ad. 7: Plant: growth habit in autumn of year of sowing

A visual estimate is taken of the angle that the outer shoots make with the horizontal.



- 1 = erect
- 3 = semi-erect
- 5 = intermediate
- 7 = semi-prostrate
- 9 = prostrate

Ad. 11: Time of flowering

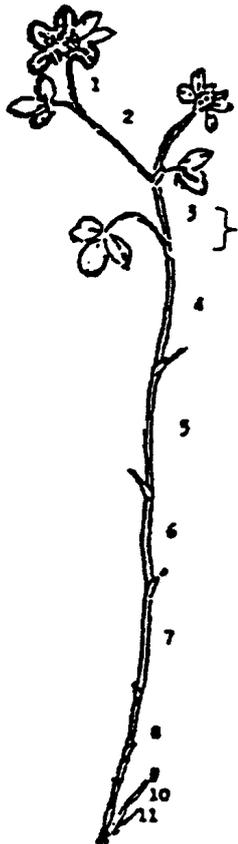
The observation should be made when 3 heads per plant are flowering.

Ad. 12, 13 and 14: Stem: length (12), thickness (13), number of internodes (14)

The longest stem should be observed including the head within 1-2 weeks after mean date of flowering. The thickness should be measured 2 to 4 cm above tillering node.

Ad. 15: Stem: density of hairs

The density of hairs should be observed on the 3rd internode of a fully expanded flower head on the same stem on which the length of stem is measured.

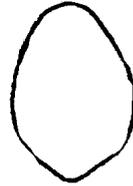


The observation should be made on this internode.

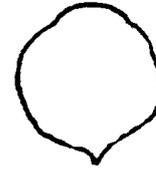
Ad. 16: Leaf: shape of medial leaflet



1
elongated



2
ovate



3
rounded

Ad. 19: Leaf: intensity of white marks

The observation should be made at beginning of flowering on the upper third of the plant.

Ad. 20: Plant: natural height in aftermath

The observation should be made within 4 to 6 weeks after the summer cut.

IX. Literature

Taylor, N.L., 1985: "Clover science and technology," Agronomy nr. 25 in the series American Society of Agronomy, Inc., Crop Science Society

Taylor, N.L. and Quesenberry, K.H., 1996: Red Clover Science, Kluwer Academic Publishers, 228 pp.

Mousset-Déclas, C., 1992: Le Trèfle Violet. In "Amélioration des espèces végétales cultivées, objectif et critères de sélection," ed. Gallais et Bannerot, INRA ed., pp.339-348

Mousset-Déclas, C., 1995: Les trèfles ou le genre Trifolium. In "Ressources génétiques des plantes fourragères et à gazon. Prosperi, Guy, Balfourier Coord. Coéd. BRG-INRA, pp. 177-211.

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p><i>Trifolium pratense</i> L. RED CLOVER</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety (number of components and generation, origin etc.)

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
5.1 Ploidy (2)		
diploid	Renova	2 []
tetraploid	Titus	4 []
5.2 Time of flowering (11)		
very early	Lipiero, Wiro	1 []
early	Formica, Renova	3 []
medium	Barfiola, Marino	5 []
late	Lucrum, Markus	7 []
very late	Björn, Kora	9 []
5.3 Stem: length (12)		
very short	Wiro	1 []
short	Renova	3 []
medium	Tempus	5 []
long	Markus	7 []
very long		9 []
5.4 Leaf: length of medial leaflet (17)		
short		3 []
medium		5 []
long		7 []

Characteristics		Example Varieties	Note
5.5 Leaf: width of medial leaflet (18)			
narrow		Wiro	3 []
medium		Merviot	5 []
broad		Rotra	7 []
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 pest 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 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.

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