These Test Guidelines have been superseded by a later version. The latest adopted version of Test Guidelines can be found at http://www.upov.int/test_guidelines/en/list.jsp

This publication has been scanned from a paper copy and may have some discrepancies from the original document.

Ces principes directeurs d'examen ont été remplacés par une version ultérieure. La version adoptée la plus récente des principes directeurs d'examen figure à l'adresse suivante : http://www.upov.int/test_guidelines/fr/list.jsp

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Las presentes directrices de examen han sido reemplazadas por una versión posterior. La versión de las directrices de examen de más reciente aprobación está disponible en http://www.upov.int/test_guidelines/es/list.jsp.

Este documento ha sido escaneado a partir de una copia en papel y puede que existan divergencias en relación con el documento original.
GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

BEETROOT
(Beta vulgaris L. var. conditiva Alef.)

GENEVA
1996

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 Beta vulgaris L. var. conditiva Alef.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed 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:

   200 g.

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing 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 similar growing periods.

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 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 should include a total of 200 plants which should be divided between two or more 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. All observations determined by measurement or counting should be made on 60 plants or parts of 60 plants.
2. For the assessment of uniformity of hybrid varieties a population standard of 2% with an acceptance probability of at least 95% should be applied to off-types excluding clearly recognizable inbred plants. In the case of a sample size of 200 plants the maximum number of off-types allowed would be 7. In addition a population standard of 2% with the same acceptance probability should be applied to clearly recognizable inbred plants. In the case of a sample size of 200 plants the additional maximum number of clearly recognizable inbred plants allowed would be 7.

3. All observations on the leaf should be made on fully developed leaves.

4. All observations on the root should be made when the root is fully developed and the color is not changing any more.

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:

   (a) Germity (characteristic 1)
   (b) Root: shape of longitudinal section (characteristic 16)
   (c) Root: external color (characteristic 21).

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

<table>
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<tr>
<th>English</th>
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<td>Keimpflanze:</td>
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<td>pigmentación</td>
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<td>pigmentation de</td>
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<td>antociánica del</td>
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<td>3. Leaf: attitude</td>
<td>Feuille: port du</td>
<td>Blatt: Haltung</td>
<td>Hoja: porte del</td>
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<td>aufrecht</td>
<td>erecto</td>
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<td>del limbo</td>
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<td>Note/Nota</td>
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<td>5. (*): Leaf: length (including petiole)</td>
<td>Feuille: longueur (pétiole inclus)</td>
<td>Blatt: Länge (einschließlich Stiel)</td>
<td>Hoja: longitud (incluyendo peciolo)</td>
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<td>media</td>
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<td>longue</td>
<td>lang</td>
<td>larga</td>
<td>Longue des Vertus</td>
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<td>largo</td>
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<tr>
<td>7. (*): Leaf blade: width</td>
<td>Limbe: largeur</td>
<td>Blattspreite: Breite</td>
<td>Limbo: anchura</td>
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<tr>
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<td>étroit</td>
<td>schmal</td>
<td>estrecho</td>
<td>Bikores</td>
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<td>moyen</td>
<td>mittel</td>
<td>medio</td>
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<td>large</td>
<td>breit</td>
<td>ancho</td>
<td>Crosby’s Egyptian</td>
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<tr>
<td>8. (*): Leaf blade: shape</td>
<td>Limbe: forme</td>
<td>Blattspreite: Form</td>
<td>Limbo: forma</td>
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<td>schmal elliptisch</td>
<td>elíptica estrecha</td>
<td>Cheltenham Mono</td>
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<td>elliptisch</td>
<td>elíptica</td>
<td>Detroit 2</td>
<td>5</td>
</tr>
<tr>
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<td>elliptique large</td>
<td>breit elliptisch</td>
<td>elíptica ancha</td>
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<td>claro</td>
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<td>dunkel</td>
<td>oscuro</td>
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<td>deutsch</td>
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<tr>
<td>10.</td>
<td>Leaf blade: anthocyanin coloration (at harvest maturity)</td>
<td>Limbe: pigmentation anthocyanique (au stade de récolte)</td>
<td>Blattspreite: Anthocyankörperung (bei Erntereife)</td>
<td>Limbo: pigmentación antociánica (en la madurez de cosecha)</td>
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<td>absent or very weak</td>
<td>nulle ou très faible</td>
<td>fehlend oder sehr gering</td>
<td>ausente o muy débil</td>
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<td>faible</td>
<td>gering</td>
<td>débil</td>
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<td>mittel</td>
<td>media</td>
<td>Regala</td>
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<tr>
<td></td>
<td>strong</td>
<td>forte</td>
<td>stark</td>
<td>fuerte</td>
<td>Egyptian Platronde</td>
</tr>
<tr>
<td></td>
<td>very strong</td>
<td>très forte</td>
<td>sehr stark</td>
<td>muy fuerte</td>
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|    | absent or very weak | nulle ou très faible | fehlend oder sehr gering | ausente o muy débil | Burpee’s Golden | 1 |
|    | weak | faible | gering | débil | Trianon | 3 |
|    | medium | moyenne | mittel | medio | Regala | 5 |
|    | strong | forte | stark | fuerte | Egyptian Platronde | 7 |
|    | very strong | très forte | sehr stark | muy fuerte | Detroit 5 | 9 |

|    | weak | faible | gering | débil | Crosby’s Egyptian | 3 |
|    | medium | moyenne | mittel | media | Bikores | 5 |
|    | strong | forte | stark | fuerte | Amigo, Burpee’s Golden | 7 |

<p>|    | narrow | étroite | schmal | estrecha | Cylinder | 3 |
|    | medium | moyenne | mittel | media | Bikores | 5 |
|    | broad | large | breit | ancha | Crosby’s Egyptian | 7 |</p>
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<td>rojo</td>
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<td>violette</td>
<td>purpur</td>
<td>púrpura</td>
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<td>15. (*). Root: position in soil</td>
<td>Racine: position dans le sol</td>
<td>Rübe: Sitz im Boden</td>
<td>Raíz: posición en el suelo</td>
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<td></td>
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<td>very shallow</td>
<td>très superficielle</td>
<td>sehr flach</td>
<td>muy superficial</td>
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<td>profunda</td>
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<tr>
<td>very deep</td>
<td>très enterrée</td>
<td>sehr tief</td>
<td>muy profunda</td>
<td>Crapaudine</td>
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<td>16. (*). Root: shape of longitudinal section</td>
<td>Racine: forme de la section longitudinale</td>
<td>Rübe: Form des Längsschnittes</td>
<td>Raíz: forma de la sección longitudinal</td>
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<td>quer schmal elliptisch</td>
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<td>quer elliptisch</td>
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<td>rund</td>
<td>circular</td>
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<td>obovale</td>
<td>verkehrt eiförmig</td>
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<td>schmal rechteckig</td>
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<td>schmal verkehrt dreieckig</td>
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<td>18. (*)</td>
<td>Root: width</td>
<td>Racine: largeur</td>
<td>Rübe: Breite</td>
<td>Raíz: anchura</td>
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<td>étroite</td>
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<td>estrecha</td>
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<td>large</td>
<td>breit</td>
<td>larga</td>
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<td>19. (*)</td>
<td>Root: shape of base</td>
<td>Racine: forme de la base</td>
<td>Rübe: Form der Basis</td>
<td>Raíz: forma de la base</td>
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<td>spitz</td>
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<td>fehlend oder sehr gering</td>
<td>ausente o muy débil</td>
<td></td>
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<td>sehr stark</td>
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<td>21. (*)</td>
<td>Root: external color</td>
<td>Racine: couleur externe</td>
<td>Rübe: Außenfarbe</td>
<td>Raíz: color externo</td>
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<td>gelb</td>
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<td>deutsch</td>
<td>español</td>
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<td>Note/Nota</td>
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<tr>
<td><strong>22. Root: main color of flesh</strong></td>
<td>Racine: couleur principale de la chair</td>
<td>Rübe: Hauptfarbe des Fleisches</td>
<td>Raíz: color principal de la carne</td>
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<td>purpur</td>
<td>púrpura</td>
<td>Cylinder</td>
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<tr>
<td><strong>23. Root: intensity of main color of flesh</strong></td>
<td>Racine: intensité de la couleur principale de la chair</td>
<td>Rübe: Intensität der Hauptfarbe des Fleisches</td>
<td>Raíz: intensidad del color principal de la carne</td>
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<td>hell</td>
<td>claro</td>
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<td>gering</td>
<td>débil</td>
<td>Forono</td>
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<td>mittel</td>
<td>media</td>
<td>Renova, Juwakugel</td>
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<td>stark</td>
<td>fuerte</td>
<td>Detroit 3, Detroit 7</td>
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<tr>
<td>very strong</td>
<td>très forte</td>
<td>sehr stark</td>
<td>muy fuerte</td>
<td>Alvro-Mono</td>
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<tr>
<td><strong>25. Bolting tendency (from an early sowing)</strong></td>
<td>Tendance à la montaison (en semis précoce)</td>
<td>Neigung zum Schossen (bei Frühkultur)</td>
<td>Tendencia a la salida a flor (en siembra temprana)</td>
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</tr>
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<td>nulle ou très faible</td>
<td>fehlend oder sehr gering</td>
<td>ausente o muy débil</td>
<td>Boltardy, Dragon</td>
<td>1</td>
</tr>
<tr>
<td>weak</td>
<td>faible</td>
<td>gering</td>
<td>débil</td>
<td></td>
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</tr>
<tr>
<td>medium</td>
<td>moyenne</td>
<td>mittel</td>
<td>media</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>strong</td>
<td>forte</td>
<td>stark</td>
<td>fuerte</td>
<td>Detroit 3, Juwakugel</td>
<td>7</td>
</tr>
<tr>
<td>very strong</td>
<td>très forte</td>
<td>sehr stark</td>
<td>muy fuerte</td>
<td></td>
<td>9</td>
</tr>
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</table>
VIII. Explanation on the Table of Characteristics

Ad. 1: Germity

Germity should be observed in 200 plants. Monogerm seed should be genetically monogerm and at least 90% of seed clusters should lead to single plants. Multigerm seed would lead to less than 90% single plants.

Ad. 16: Root: shape of longitudinal section

1. transverse narrow elliptic
2. transverse elliptic
3. circular
4. obovate
5. narrow oblong
6. narrow obtriangular

Ad. 19: Root: shape of base

1. pointed
2. rounded
3. flat
4. recessed
Ad. 25: Bolting tendency (from an early sowing)

Method of cold treatment

Seed is laid out on a filter paper, which will be kept moist for germination. The minimum germination temperature is 18°C. With emergence of the root the seedlings will be transplanted into little pots (i.e. Jiffy with 4 cm diameter) and subjected to cold treatment in cold storage for four weeks at 3°C without artificial lighting.

After the cold treatment the seedlings will be cultivated under normal conditions preferably in the greenhouse (2°C minimum temperature, ventilation at 7°C). Multigerm varieties with several emerging seedlings from one cluster usually will not be singled. After the development of two true leaves the young plants will be transplanted into the open field.

The bolted plants (with shoot axis elongated by more than 5 cm) will be counted at least once a week.

It is recommended to conduct this test as early as possible in the year, because the bolting is very strongly influenced by the climatic conditions after the cold treatment. Beetroot is very sensitive to devernalization at temperatures above 18°C.
IX. Literature


X. Technical Questionnaire

<table>
<thead>
<tr>
<th>Reference Number (not to be filled in by the applicant)</th>
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</thead>
</table>

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders’ rights

1. Species  
*Beta vulgaris* L. var. *conditiva* Alef.  
BEETROOT

2. Applicant (Name and address)

3. Proposed denomination or breeder’s reference

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

4.1 Method of maintenance and reproduction

(a) Hybrid  
(b) Open-pollinated variety

[ ] [ ]
4.2. Other information

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).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Example Varieties</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.1 Germity</strong></td>
<td></td>
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<td>(1)</td>
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<td>Mondoet, Monopoly</td>
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<td>Crosby’s Egyptian, Detroit 2</td>
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<tr>
<td><strong>5.2 Leaf blade: shape</strong></td>
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<tr>
<td>(8)</td>
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<tr>
<td>narrow elliptic</td>
<td>Cheltenham Mono</td>
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<tr>
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<td><strong>5.3 Leaf blade: intensity of green color</strong></td>
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<td>transverse narrow elliptic</td>
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<tr>
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<td>6[ ]</td>
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<tr>
<td>Characteristics</td>
<td>Example Varieties</td>
<td>Note</td>
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<td><strong>5.5 Root: length</strong></td>
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<td><strong>5.8 Bolting tendency (from an early sowing)</strong></td>
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<td>5[   ]</td>
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### 6. Similar varieties and differences between these varieties

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<tr>
<th>Denomination of similar variety</th>
<th>Characteristic in which the similar variety is different (^o)</th>
<th>State of expression of similar variety</th>
<th>State of expression of candidate variety</th>
</tr>
</thead>
</table>

\(^o\) 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