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

Geneva

DRAFT

## SOYA BEAN

UPOV Code(s): GLYCI\_MAX

*Glycine max* (L.) Merr.

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from Argentina**to be considered by the**the Technical Committee at its fifty-eighth session**to be held in Geneva on October 24 and 25, 2022**Disclaimer: this document does not represent UPOV policies or guidance*

Alternative names:\*

| <i>Botanical name</i>  | <i>English</i>     | <i>French</i> | <i>German</i> | <i>Spanish</i> |
|--|--------------------|---------------|---------------|----------------|
| <i>Glycine max</i> (L.) Merr.,<br><i>Soja hispida</i> Moench | Soya Bean, Soybean | Soja          | Sojabohne     | Soja           |

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

## ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

\* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website ([www.upov.int](http://www.upov.int)), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Glycine max* (L.) Merr.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

1 kg of seed.

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

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

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness".

3.3 *Conditions for Conducting the Examination*

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.2.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 300 plants, which should be divided between at least 2 replicates.

3.4.2 The assessment of the characteristic "Plant: growth type" should be carried out on a total of at least 60 plants, which should be divided by at least two replicates.

3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

### 3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

## 4. Assessment of Distinctness, Uniformity and Stability

### 4.1 *Distinctness*

#### 4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

#### 4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

#### 4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

#### 4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts of plants taken from each of 20 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

#### 4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement 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 observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

#### 4.2 *Uniformity*

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 These Test Guidelines have been developed for the examination of self-pollinated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 For the assessment of uniformity of self-pollinated varieties, a population standard of 0.5% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 300 plants, 4 off-types are allowed.

#### 4.3 *Stability*

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

### 5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Plant: color of hairs on main stem (characteristic 9)
- (b) Flower: color (characteristic 10)
- (c) Time of maturity (characteristic 11)
- (d) Seed: coloration of hilum (characteristic 20)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

## 6. Introduction to the Table of Characteristics

### 6.1 *Categories of Characteristics*

#### 6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

#### 6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by \*) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

### 6.2 *States of Expression and Corresponding Notes*

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 All relevant states of expression are presented in the characteristic.

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

### 6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

### 6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

## 6.5 Legend

|   |   | English                            | français                     | deutsch                       | español                        | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---|---|------------------------------------|------------------------------|-------------------------------|--------------------------------|--|---------------|
| 1 | 2 | 3                                  | 4                            | 5                             | 6                              | 7  |               |
|   |   | Name of characteristics in English | Nom du caractère en français | Name des Merkmals auf Deutsch | Nombre del carácter en español |  |               |
|   |   | states of expression               | types d'expression           | Ausprägungsstufen             | tipos de expresión             |  |               |

- 1 Characteristic number
- 2 (\*) Asterisked characteristic – see Chapter 6.1.2
- 3 Type of expression  
 QL Qualitative characteristic – see Chapter 6.3  
 QN Quantitative characteristic – see Chapter 6.3  
 PQ Pseudo-qualitative characteristic – see Chapter 6.3
- 4 Method of observation (and type of plot, if applicable)  
 MG, MS, VG, VS – see Chapter 4.1.5
- 5 (+) See Explanations on the Table of Characteristics in Chapter 8.1
- 6 Not applicable
- 7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.2

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

|           | English   |  | français  | deutsch  | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|-----------|---|--|---|--|---------|--|---------------|
| <b>1.</b> | <b>QN</b>   | <b>VG</b>  | <b>(+)</b>  | <b>10</b>  |         |  |               |
|           | <b>Hypocotyl: intensity of anthocyanin coloration</b> | <b>Hypocotyle : intensité de la pigmentation anthocyanique</b> | <b>Hypokotyl: Intensität der Anthocyanfärbung</b> | <b>Hipocótilo: intensidad de la pigmentación antocianica</b> |         |  |               |
|           | absent or very weak                                   | absente ou très faible   | fehlend oder sehr gering                          | ausente o muy débil  |         | VC 8080 IPRO   | 1             |
|           | weak  | faible   | gering  | débil  |         |  | 2             |
|           | medium  | moyenne  | mittel  | media  |         |  | 3             |
|           | strong  | forte  | stark   | fuerte   |         |  | 4             |
|           | very strong   | forte à très forte   | sehr stark bis sehr stark                         | muy fuerte   |         |  | 5             |
| <b>2.</b> | <b>QN</b>   | <b>MG</b>  | <b>(+)</b>  | <b>61</b>  |         |  |               |
|           | <b>Time of beginning of flowering</b>                 | <b>Époque du début de la floraison</b>                         | <b>Zeitpunkt des Blühbeginns</b>                  | <b>Época de inicio de la floración</b>                       |         |  |               |
|           | very early  | très précoce   | sehr früh   | muy temprana   |         |  | 1             |
|           | very early to early                                   | très précoce à précoce   | sehr früh bis früh                                | muy temprana a temprana                                      |         |  | 2             |
|           | early   | précoce  | früh  | temprana   |         | NS 2018  | 3             |
|           | early to medium                                       | précoce à moyenne  | früh bis mittel                                   | temprana a media   |         | 3806IPRO,<br>DON MARIO 40R16   | 4             |
|           | medium  | moyenne  | mittel  | media  |         | 53I53 RSF IPRO, RA 545   | 5             |
|           | medium to late  | moyenne à tardive  | mittel bis spät                                   | media a tardía   |         | NS 6448  | 6             |
|           | late  | tardive  | spät  | tardía   |         | RA 750   | 7             |
|           | late to very late                                     | tardive à très tardive   | spät bis sehr spät                                | tardía a muy tardía  |         | VC 8080 IPRO   | 8             |
|           | very late   | très tardive   | sehr spät   | muy tardía   |         | NS 8288  | 9             |
| <b>3.</b> | <b>QN</b>   | <b>VG</b>  |   | <b>65</b>  |         |  |               |
|           | <b>Leaf: blistering</b>                               | <b>Feuille : cloûre</b>  | <b>Blatt: Blasigkeit</b>                          | <b>Hoja: abullonado</b>                                      |         |  |               |
|           | absent or very weak                                   | absent ou très faible  | fehlend oder sehr gering                          | ausente o muy débil  |         |  | 1             |
|           | very weak to weak                                     | très faible à faible   | sehr gering bis gering                            | muy débil a débil  |         |  | 2             |
|           | weak  | faible   | gering  | débil  |         |  | 3             |
|           | weak to medium  | faible à moyenne   | gering bis mittel                                 | débil a medio  |         |  | 4             |
|           | medium  | moyenne  | mittel  | medio  |         |  | 5             |
|           | medium to strong                                      | moyenne à forte  | mittel bis stark                                  | media a fuerte   |         | SYN 1561 IPRO  | 6             |
|           | strong  | forte  | stark   | fuerte   |         |  | 7             |
|           | strong to very strong                                 | forte à très forte   | stark bis sehr stark                              | fuerte a muy fuerte  |         | RA 5816, RA 655  | 8             |
|           | very strong   | très forte   | sehr stark  | muy fuerte   |         |  | 9             |



|               | English                               |  | français                                       | deutsch                                 | español                        | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---------------|---------------------------------------|--|--|---|--------------------------------|--|---------------|
| <b>4. (*)</b> | <b>PQ</b>                             | <b>VG</b>                                      | <b>(+)</b>                                     | <b>65</b>                               |                                |  |               |
|               | <b>Leaf: shape of lateral leaflet</b> | <b>Feuille : forme de la foliole latérale</b>  | <b>Blatt: Form der seitlichen Blatffieder</b>  | <b>Hoja: forma del foliolo lateral</b>  |                                |  |               |
|               | lanceolate                            | lancéolée                                      | lanzettlich                                    | lanceolada                              | Crina F, Opaline               |  | 1             |
|               | triangular                            | triangulaire                                   | dreieckig                                      | triangular                              | Sponsor                        |  | 2             |
|               | pointed ovate                         | pointue ovale                                  | zugespitzt eiförmig                            | oval puntiaguda                         | Es Gladiator, RGT Speeda       |  | 3             |
|               | round ovate                           | arrondie ovale                                 | rund eiförmig                                  | oval redonda                            | Córdoba, Es Mentor, RGT Shouna |  | 4             |
| <b>5.</b>     | <b>QN</b>                             | <b>VG</b>                                      |  | <b>65</b>                               |                                |  |               |
|               | <b>Leaf: size of lateral leaflet</b>  | <b>Feuille : taille de la foliole latérale</b> | <b>Blatt: Größe der seitlichen Blatffieder</b> | <b>Hoja: tamaño del foliolo lateral</b> |                                |  |               |
|               | very small                            | très petite                                    | sehr klein                                     | muy pequeño                             |                                |  | 1             |
|               | very small to small                   | très petite à petite                           | sehr klein bis klein                           | muy pequeño a pequeño                   |                                |  | 2             |
|               | small                                 | petite   | klein  | pequeño                                 | SYN 1561 IPRO                  |  | 3             |
|               | small to medium                       | petite à moyenne                               | klein bis mittel                               | pequeño a medio                         | NS 5258                        |  | 4             |
|               | medium                                | moyenne  | mittel   | medio                                   | SJ 13397                       |  | 5             |
|               | medium to large                       | moyenne à grande                               | mittel bis groß                                | medio a grande                          |                                |  | 6             |
|               | large                                 | grande   | groß   | grande                                  |                                |  | 7             |
|               | large to very large                   | grande à très grande                           | groß bis sehr groß                             | grande a muy grande                     | IPB 6.2 Y                      |  | 8             |
|               | very large                            | à très grande                                  | sehr groß                                      | muy grande                              |                                |  | 9             |
| <b>6.</b>     | <b>QN</b>                             | <b>VG</b>                                      |  | <b>65</b>                               |                                |  |               |
|               | <b>Leaf: intensity of green color</b> | <b>Feuille : intensité de la couleur verte</b> | <b>Blatt: Intensität der Grünfärbung</b>       | <b>Hoja: intensidad del color verde</b> |                                |  |               |
|               | very light                            | très claire                                    | sehr hell                                      | muy clara                               |                                |  | 1             |
|               | very light to light                   | très claire à claire                           | sehr hell bis hell                             | muy clara a clara                       |                                |  | 2             |
|               | light                                 | claire   | hell   | clara                                   |                                |  | 3             |
|               | light to medium                       | claire à moyenne                               | hell bis mittel                                | clara a media                           | 63164 RSF IPRO                 |  | 4             |
|               | medium                                | moyenne  | mittel   | media                                   |                                |  | 5             |
|               | medium to dark                        | moyenne à foncée                               | mittel bis dunkel                              | media a oscura                          |                                |  | 6             |
|               | dark                                  | foncée   | dunkel   | oscuro                                  | 53153 RSF IPRO                 |  | 7             |
|               | dark to very dark                     | foncée à très foncée                           | dunkel bis sehr dunkel                         | oscuro a muy oscura                     | IPB 6.2 Y, RA 5816             |  | 8             |
|               | very dark                             | très foncée                                    | sehr dunkel                                    | muy oscura                              |                                |  | 9             |

|                | English                                   | français   | deutsch  | español   | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|----------------|---|--|--|---|--|---------------|
| <b>7. (*)</b>  | <b>QN VS</b>                              | <b>(+)</b>   | <b>66-89</b>   |   |  |               |
|                | <b>Plant: growth type</b>                 | <b>Plante : type de croissance</b>                           | <b>Pflanze: Wuchstyp</b>                             | <b>Planta: tipo de crecimiento</b>                        |  |               |
|                | determinate                               | déterminé  | begrenzt wachsend                                    | determinado   | NS 8288  | 1             |
|                | semi determinate                          | semi-déterminé   | halb begrenzt wachsend                               | semideterminado   | NS 6448  | 2             |
|                | indeterminate                             | indéterminé  | unbegrenzt wachsend                                  | indeterminado   | 5407IPRO,<br>DON MARIO 40R16   | 3             |
| <b>8.</b>      | <b>QN VG</b>                              | <b>(+)</b>   | <b>66 80</b>   |   |  |               |
|                | <b>Plant: attitude of branches</b>        | <b>Plante : port des ramifications</b>                       | <b>Pflanze: Haltung der Seitentriebe</b>             | <b>Planta: porte de las ramas</b>                         |  |               |
|                | erect                                     | dressé   | aufrecht   | erecto  |  | 1             |
|                | erect to semi erect                       | dressé à demi-dressé   | aufrecht bis halbaufrecht                            | erecto a semierecto                                       | NS 5258  | 2             |
|                | semi erect                                | demi-dressé  | halbaufrecht   | semierecto  | 50MS01   | 3             |
|                | semi erect to horizontal                  | demi-dressé à horizontal                                     | halbaufrecht bis waagerecht                          | semierecto a horizontal                                   | GE642 CI   | 4             |
|                | horizontal                                | horizontal   | waagerecht   | horizontal  |  | 5             |
| <b>9. (*)</b>  | <b>PQ VG</b>                              | <b>(+)</b>   | <b>65-85</b>   |   |  |               |
|                | <b>Plant: color of hairs on main stem</b> | <b>Plante : couleur de la pilosité de la tige principale</b> | <b>Pflanze: Farbe der Behaarung des Haupttriebes</b> | <b>Planta: color de la vellosidad del tallo principal</b> |  |               |
|                | light brown                               | brun clair   | hellbraun  | marrón claro  | 53I53 RSF IPRO   | 1             |
|                | dark brown                                | brun foncé   | dunkelbraun  | marrón oscuro   | NS 8288  | 2             |
|                | grey                                      | gris   | grau   | gris  | 5407IPRO, RA 750   | 3             |
| <b>10. (*)</b> | <b>QL VG</b>                              |  | <b>66</b>  |   |  |               |
|                | <b>Flower: color</b>                      | <b>Fleur : couleur</b>                                       | <b>Blüte: Farbe</b>                                  | <b>Flor: color</b>  |  |               |
|                | white                                     | blanc  | weiß   | blanco  | 53I53 RSF IPRO   | 1             |
|                | violet                                    | violet   | violett  | violeta   | DON MARIO 40R16  | 2             |

|                | English                 |                           | français                   | deutsch                 | español                             | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|----------------|-------------------------|---------------------------|----------------------------|-------------------------|-------------------------------------|--|---------------|
| <b>11. (*)</b> | <b>QN</b>               | <b>MG</b>                 | <b>(+)</b>                 |                         |                                     |  |               |
|                | <b>Time of maturity</b> | <b>Époque de maturité</b> | <b>Zeitpunkt der Reife</b> | <b>Época de madurez</b> |                                     |  |               |
|                | very early              | très précoce              | sehr früh                  | muy temprana            |                                     |  | 1             |
|                | very early to early     | très précoce à précoce    | sehr früh bis früh         | muy temprana a temprana |                                     |  | 2             |
|                | early                   | précoce                   | früh                       | temprana                | NS 2018                             |  | 3             |
|                | early to medium         | précoce à moyenne         | früh bis mittel            | temprana a media        | 3420, 3806IPRO                      |  | 4             |
|                | medium                  | moyenne                   | mittel                     | media                   | 47MS01,<br>DON MARIO 40R16          |  | 5             |
|                | medium to late          | moyenne à tardive         | mittel bis spät            | media a tardía          | 53I53 RSF IPRO,<br>5407IPRO, RA 545 |  | 6             |
|                | late                    | tardive                   | spät                       | tardía                  | NS 6448                             |  | 7             |
|                | late to very late       | tardive à très tardive    | spät bis sehr spät         | tardía a muy tardía     | RA 750                              |  | 8             |
|                | very late               | très tardive              | sehr spät                  | muy tardía              | 8473 RSF,<br>VC 8080 IPRO           |  | 9             |
| <b>12.</b>     | <b>QN</b>               | <b>MS/VG</b>              |                            | <b>85</b>               |                                     |  |               |
|                | <b>Plant: height</b>    | <b>Plante : hauteur</b>   | <b>Pflanze: Höhe</b>       | <b>Planta: altura</b>   |                                     |  |               |
|                | very short              | très courte               | sehr niedrig               | muy baja                |                                     |  | 1             |
|                | very short to short     | très courte à courte      | sehr niedrig bis niedrig   | muy baja a baja         |                                     |  | 2             |
|                | short                   | courte                    | niedrig                    | baja                    |                                     |  | 3             |
|                | short to medium         | courte à moyenne          | niedrig bis mittel         | baja a media            | NS 5258                             |  | 4             |
|                | medium                  | moyenne                   | mittel                     | media                   |                                     |  | 5             |
|                | medium to tall          | moyenne à haute           | mittel bis hoch            | media a alta            | RA 655                              |  | 6             |
|                | tall                    | haute                     | hoch                       | alta                    |                                     |  | 7             |
|                | tall to very tall       | haute à très haute        | hoch bis sehr hoch         | alta a muy alta         | NS 6859 IPRO                        |  | 8             |
|                | very tall               | très haute                | sehr hoch                  | muy alta                |                                     |  | 9             |
| <b>13. (*)</b> | <b>PQ</b>               | <b>VG</b>                 | <b>(+)</b>                 | <b>85</b>               |                                     |  |               |
|                | <b>Pod: color</b>       | <b>Gousse : couleur</b>   | <b>Hülse: Farbe</b>        | <b>Vaina: color</b>     |                                     |  |               |
|                | light brown             | brun clair                | hellbraun                  | marrón claro            | NS 2018                             |  | 1             |
|                | medium brown            | brun moyen                | mittelbraun                | marrón medio            | DON MARIO 40R16                     |  | 2             |
|                | dark brown              | brun foncé                | dunkelbraun                | marrón oscuro           |                                     |  | 3             |
|                | light grey              | gris clair                | hellgrau                   | gris claro              |                                     |  | 4             |
|                | medium grey             | gris moyen                | mittelgrau                 | gris medio              |                                     |  | 5             |
|                | dark grey               | gris foncé                | dunkelgrau                 | gris oscuro             |                                     |  | 6             |
|                | black                   | noir                      | schwarz                    | negro                   |                                     |  | 7             |

|            | English                                       |   | français                                       | deutsch  | español               | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|---|---|--|--|-----------------------|--|---------------|
| <b>14.</b> | <b>QN</b>                                     | <b>VG</b>   | <b>(+)</b>                                     | <b>85</b>  |                       |  |               |
|            | <b>Pod: grey coloration of seed convexity</b> | <b>Gousse : coloration grise de la convexité de la graine</b> | <b>Hülse: Graufärbung der Samenkconvexität</b> | <b>Vaina: coloración gris de la convexidad de la semilla</b> |                       |  |               |
|            | absent or very weak                           | absente ou très faible  | fehlend oder sehr gering                       | ausente o muy débil  | NS 2018               |  | 1             |
|            | weak  | faible  | gering   | débil  | RA 750                |  | 2             |
|            | medium  | moyenne   | mittel   | media  | 47MS01, 5407IPRO      |  | 3             |
|            | strong  | forte   | stark  | fuerte   | 3420                  |  | 4             |
|            | very strong                                   | forte à très forte  | sehr stark                                     | muy fuerte   |                       |  | 5             |
| <b>15.</b> | <b>QN</b>                                     | <b>MG</b>   |  | <b>89</b>  |                       |  |               |
|            | <b>Seed: 1000 seed weight</b>                 | <b>Graine : poids de 1000 graines</b>                         | <b>Samen: 1000 Korngewicht</b>                 | <b>Semilla: peso de 1000 semillas</b>                        |                       |  |               |
|            | very low                                      | très petit  | sehr niedrig                                   | muy bajo   |                       |  | 1             |
|            | very low to low                               | très petit à petit  | sehr niedrig bis niedrig                       | muy bajo a bajo  |                       |  | 2             |
|            | low   | petit   | niedrig  | bajo   | NS 5258, NS 6859 IPRO |  | 3             |
|            | low to medium                                 | petit à moyen   | niedrig bis mittel                             | bajo a medio   |                       |  | 4             |
|            | medium  | moyen   | mittel   | medio  |                       |  | 5             |
|            | medium to high                                | moyen à grand   | mittel bis hoch                                | medio a alto   | IPB 6.2 Y             |  | 6             |
|            | high  | grand   | hoch   | alto   |                       |  | 7             |
|            | high to very high                             | grand à très grand  | hoch bis sehr hoch                             | alto a muy alto  |                       |  | 8             |
|            | very high                                     | très grand  | sehr hoch                                      | muy alto   |                       |  | 9             |
| <b>16.</b> | <b>PQ</b>                                     | <b>VG</b>   |  | <b>89</b>  |                       |  |               |
|            | <b>Seed: shape</b>                            | <b>Graine : forme</b>   | <b>Samen: Form</b>                             | <b>Semilla: forma</b>  |                       |  |               |
|            | spherical                                     | sphérique   | kugelförmig                                    | esférica   | NS 6859 IPRO          |  | 1             |
|            | spherical flattened                           | sphérique aplatie   | kugelförmig abgeflacht                         | esférica aplanada  | NS 5258               |  | 2             |
|            | elongated                                     | allongée  | länglich                                       | alargada   | DON MARIO 50i17 IPRO  |  | 3             |
|            | elongated flattened                           | allongé aplatie   | länglich abgeflacht                            | alargada aplanada  |                       |  | 4             |

|                | English                          |  | français                            | deutsch                                  | español                    | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|----------------|----------------------------------|--|-------------------------------------|--|----------------------------|--|---------------|
| <b>17. (*)</b> | <b>PQ</b>                        | <b>VG</b>                                | <b>(+)</b>                          | <b>89</b>                                |                            |  |               |
|                | <b>Seed: color of testa</b>      | <b>Graine : couleur du tégument</b>      | <b>Samen: Farbe der Samenschale</b> | <b>Semilla: color del tegumento</b>      |                            |  |               |
|                | green                            | vert                                     | grün                                | verde                                    |                            |  | 1             |
|                | yellow green                     | vert-jaune                               | gelbgrün                            | verde amarillento                        | Befine                     |  | 2             |
|                | yellow                           | jaune                                    | gelb                                | amarillo                                 | DON MARIO 40R16            |  | 3             |
|                | red                              | rouge                                    | rot                                 | rojo                                     |                            |  | 4             |
|                | light brown                      | brun clair                               | hellbraun                           | marrón claro                             |                            |  | 5             |
|                | medium brown                     | brun moyen                               | mittelbraun                         | marrón medio                             |                            |  | 6             |
|                | dark brown                       | brun foncé                               | dunkelbraun                         | marrón oscuro                            |                            |  | 7             |
|                | purple                           | pourpre                                  | purpurn                             | púrpura                                  |                            |  | 8             |
|                | black                            | noir                                     | schwarz                             | negro                                    |                            |  | 9             |
| <b>18. (*)</b> | <b>QN</b>                        | <b>VG</b>                                | <b>(+)</b>                          | <b>89</b>                                |                            |  |               |
|                | <b>Seed: glossiness</b>          | <b>Seed : brillance</b>                  | <b>Samen: Glanz</b>                 | <b>Semilla: brillo</b>                   |                            |  |               |
|                | absent or weak                   | absente ou faible                        | fehlend oder gering                 | ausente o débil                          | DON MARIO 40R16,<br>RA 545 |  | 1             |
|                | medium                           | moyenne                                  | mittel                              | medio                                    | NS 8288                    |  | 2             |
|                | strong                           | forte                                    | stark                               | fuerte                                   | 8473 RSF, TMG1155RR        |  | 3             |
| <b>19.</b>     | <b>QL</b>                        | <b>MG</b>                                | <b>(+)</b>                          | <b>89</b>                                |                            |  |               |
|                | <b>Seed: peroxidase reaction</b> | <b>Graine : réaction à la peroxydase</b> | <b>Samen: Peroxidase-Reaktion</b>   | <b>Semilla: reacción a la peroxidasa</b> |                            |  |               |
|                | absent                           | absente                                  | fehlend                             | ausente                                  | DON MARIO 40R16            |  | 1             |
|                | present                          | présente                                 | vorhanden                           | presente                                 | NS 8288                    |  | 9             |
| <b>20. (*)</b> | <b>PQ</b>                        | <b>VG</b>                                | <b>(+)</b>                          | <b>89</b>                                |                            |  |               |
|                | <b>Seed: coloration of hilum</b> | <b>Graine : coloration du hile</b>       | <b>Samen: Färbung des Nabels</b>    | <b>Semilla: coloración del hilo</b>      |                            |  |               |
|                | imperfect yellow                 | jaune imparfait                          | fast gelb                           | amarillo imperfecto                      | Ajico, OAC Strive          |  | 1             |
|                | yellow                           | jaune                                    | gelb                                | amarillo                                 | RA 545                     |  | 2             |
|                | light brown                      | brun clair                               | hellbraun                           | marrón claro                             | NS 6448                    |  | 3             |
|                | red brown                        | brun-rouge                               | rotbraun                            | marrón rojizo                            | 5407IPRO                   |  | 4             |
|                | dark brown                       | brun foncé                               | dunkelbraun                         | marrón oscuro                            | 53153 RSF IPRO             |  | 5             |
|                | grey                             | gris                                     | grau                                | gris                                     | TMG1155RR                  |  | 6             |
|                | imperfect black                  | noir imparfait                           | fast schwarz                        | negro imperfecto                         | RA 750                     |  | 7             |
|                | black                            | noir                                     | schwarz                             | negro                                    | DON MARIO 40R16            |  | 8             |

|            | English                                 | français  | deutsch                                   | español  | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|---|---|---|--|--|---------------|
| <b>21.</b> | <b>QL</b>                               | <b>VG</b>                                       | <b>(+)</b>                                | <b>89</b>  |  |               |
|            | <b>Seed: color of hilum<br/>funicle</b> | <b>Graine: couleur de<br/>l'attache hilaire</b> | <b>Samen: Farbe des<br/>Nabelansatzes</b> | <b>Semilla: color de la<br/>inserción del hilo</b> |  |               |
|            | same as testa                           | même couleur que le<br>tégument                 | wie Samenschale                           | igual que el del<br>tegumento                      | Córdoba, Es Mentor,<br>RGT Shouna                                      | 1             |
|            | different to testa                      | couleur différente du<br>tégument               | anders als<br>Samenschale                 | diferente de el del<br>tegumento                   | Amarok, SY Livius  | 2             |

## 8. Explanations on the Table of Characteristics

### 8.1 *Explanations for individual characteristics*

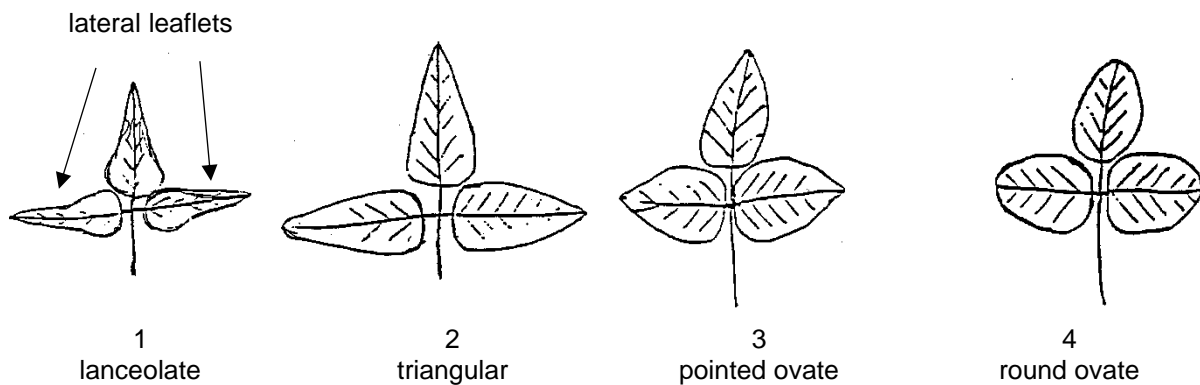
#### Ad. 1: Hypocotyl: intensity of anthocyanin coloration

Germinate 20 seeds in substrate. Seedlings should receive at least five hours of intense sunlight since emergence. Seedlings should be exposed to artificial lighting at night. Observations should be made three to five days after emergence.

#### Ad. 2: Time of beginning of flowering

Time of beginning of flowering is reached when 10% of plants show at least one open flower.

#### Ad. 4: Leaf: shape of lateral leaflet



#### Ad. 7: Plant: growth type

- Test design: Plant growth type should preferably be assessed in a special trial with 2 replicates of 30 plants each with about 9 cm between plants in the rows. Any border effect should be avoided.
- Plant material: Candidate and example varieties should be grown in groups according to their earliness at maturity (characteristic 11).
- Observation: At the beginning of flowering time (1 flower at any level of the main stem), the apex of the plant should be identified with a mark. At maturity (free kernels in the pod), the number of nodes between the mark and the top of the plant is counted. The average number of nodes per variety, in comparison with the example varieties, allows for the appropriate rating of this characteristic.

#### Determinate varieties:

- The main stem ends in a floral bud (the terminal cluster is long and with many flowers).
- The growth stops with the flowering of the terminal bud.
- The size of the terminal leaf is the same as the lower leaves in growth stage 60.

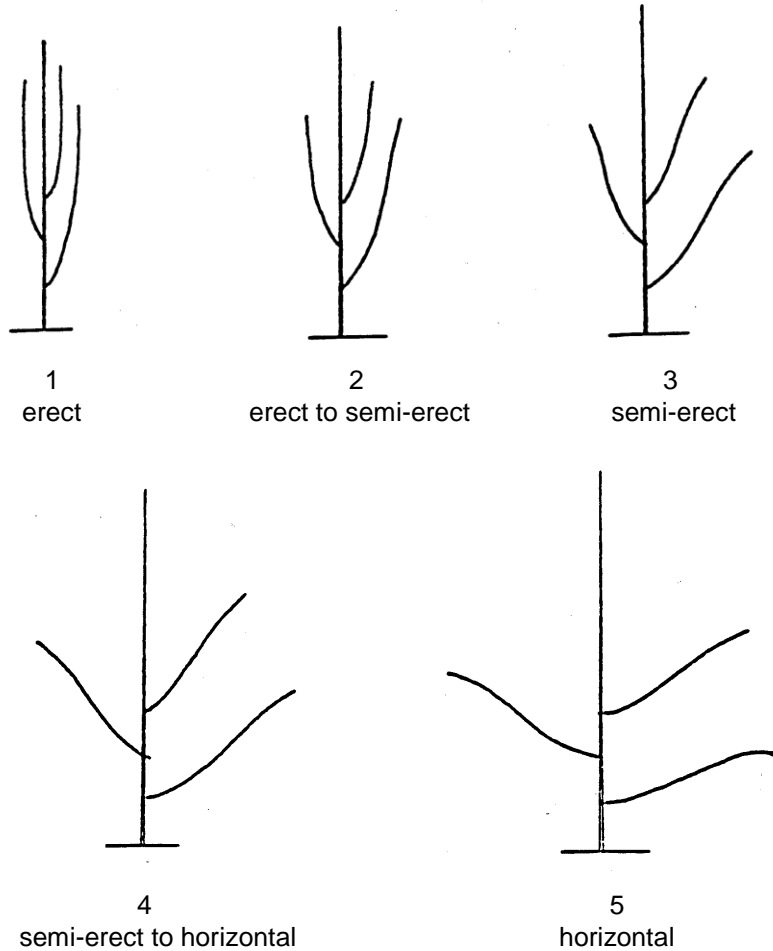
#### Semi determinate varieties:

- The main stem ends in a floral bud (the terminal cluster is short and with few flowers).
- The growth stops with the flowering of the terminal bud.
- The size of the terminal leaf is smaller than the lower leaves in growth stage 60.

#### Indeterminate varieties:

- The main stem ends in a vegetative bud.
- The growth continues after flowering.
- The apical meristem remains vegetative and continues to differentiate nodes and leaves when flowers are being differentiated in the rest of the plant.
- The terminal leaf is smaller than the lower leaves in growth stage 60.

Ad. 8: Plant: attitude of branches



Ad. 9: Plant: color of hairs on main stem

Observations should be made on the middle third of the main stem.

Ad. 11: Time of maturity

Time of maturity is reached when 90% of plants have reached growth stage 80.

Ad. 13: Pod: color

Observation should be made on pods from the middle third of the plants, including pubescence and excluding seed convexity.

Observation should be made in bright daylight in comparison with other example varieties.



Ad. 14: Pod: grey coloration of seed convexity

Observations should be made on the seed convexity of the pod (shown with black arrows).



Ad. 17: Seed: color of testa

Observation should exclude hilum.

Ad. 18: Seed: glossiness

A sample of 20 seeds should be illuminated with a focus of no more than 75 watts and the brightness or opacity is observed with the naked eye.

Ad. 19: Seed: peroxidase reaction

The coloration due to peroxidase activity in the seed coat should be observed on 20 seeds.

The seed should be placed in water for 2 hours before the seed coat is removed carefully. No piece of cotyledons should remain on the removed seed coat.

The seed coat should be placed in a cell box or in tubes (one tube per seed) and 3 to 4 cm<sup>3</sup> of 0.5% Guayacol solution should be added. The 0.5% Guayacol solution should be stored in a refrigerator for max. 2 months. After one day at room temperature, it can no longer be used.

After 10 minutes, one drop of 0.1% H<sub>2</sub>O<sub>2</sub> solution should be added.

The solution changes to dark red/brown color for a positive reaction or remains without color for a negative reaction. In order to check the 0.5% Guayacol solution, some seeds of a reference variety with a positive reaction should be included. The reaction with H<sub>2</sub>O<sub>2</sub> must be recorded within 60 seconds. Later observations can lead to wrong results.

The cell box or the tubes could be softly shaken for a better reaction. The cell box or the tubes should be placed on a white ground for observation.

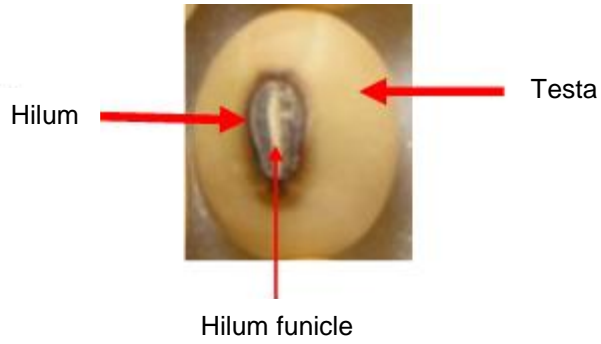
Other standard methods might be used as long as they yield the same results.

Ad. 20: Seed: coloration of hilum

Imperfect yellow: dark yellow center, surrounded by light yellow halo.

Imperfect black: dark center, surrounded by a brown halo.

Ad. 21: Seed: color of hilum funicle



Courtesy of the Canadian authorities

8.2 *Phenological Growth Stages and BBCH-Identification Keys of the Soybean \**

| CODE   |     | DESCRIPTION   |
|--|-----|---|
| 2- and 3 digit   |     |   |
| <b>Principal growth stage 0: Germination</b>                   |     |   |
| 00   | 000 | Dry seed  |
| 01   | 001 | Beginning of seed imbibition  |
| 02   | 002 | -   |
| 03   | 003 | Seed imbibition complete  |
| 04   | 004 | -   |
| 05   | 005 | Radicle emerged from seed   |
| 06   | 006 | Elongation of radicle; formation of root hairs  |
| 07   | 007 | Hypocotyl with cotyledons breaking through seed coat  |
| 08   | 008 | Hypocotyl reaches the soil surface; hypocotyl arch visible  |
| 09   | 009 | Emergence: hypocotyl with cotyledons emerged above soil surface ("cracking stage")                        |
| <b>Principal growth stage 1: Leaf development (Main shoot)</b> |     |   |
| 10   | 100 | Cotyledons completely unfolded  |
| 11   | 101 | First pair of true leaves unfolded (unifoliolate leaves on the first node)                                |
| 12   | 102 | Trifoliolate leaf on the 2nd node unfolded  |
| 13   | 103 | Trifoliolate leaf on the 3rd node unfolded  |
| 1.   | 10. | States continuous until ....  |
| 19   | 109 | Trifoliolate leaf on the 9th node unfolded. No side shoots visible <sup>1</sup>                           |
| -  | 110 | Trifoliolate leaf on the 10th node unfolded <sup>1</sup>  |
| -  | 111 | Trifoliolate leaf on the 11th node unfolded <sup>1</sup>  |
| -  | 112 | Trifoliolate leaf on the 12th node unfolded <sup>1</sup>  |
| -  | 113 | Trifoliolate leaf on the 13th node unfolded <sup>1</sup>  |
| -  | 11. | Stages continuous until ....  |
| -  | 119 | Trifoliolate leaf on the 19th node unfolded <sup>1</sup>  |
| <b>Principal growth stage 2: Formation of side shoots</b>      |     |   |
| 20   | 200 | -   |
| 21   | 201 | First side shoot visible  |
| 22   | 202 | 2nd side shoot of first order visible   |
| 23   | 203 | 3rd side shoot of first order visible   |
| 2.   | 20. | Stages continuous until ...   |
| 29   | 209 | 9 or more side shoots of first order visible (2 digit)<br>9th side shoot of first order visible (3 digit) |
| -  | 210 | 10th side shoot of first order visible  |
| -  | 221 | First side shoot of 2nd order visible   |
| -  | 22. | Stages continuous until ...   |
| -  | 229 | 9th side shoot of 2nd order visible   |
| -  | 2N1 | First side shoot of Nth order visible   |
| -  | 2N9 | 9th side shoot of Nth order visible   |

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<sup>1</sup> The side shoot development may occur earlier; in this case continue with the principal growth stage 2

| CODE  |     | DESCRIPTION  |
|---|-----|--|
| 2- and 3 digit  |     |  |
| <b>Principal growth stage 3: <sup>2</sup></b>   |     |  |
| <b>Principal growth stage 4: Development of harvestable vegetative plant parts – Main shoot -</b> |     |  |
| 40  | 400 | -  |
| 41  | 401 | -  |
| 42  | 402 | -  |
| 43  | 403 | -  |
| 44  | 404 | -  |
| 45  | 405 | -  |
| 46  | 406 | -  |
| 47  | 407 | -  |
| 48  | 408 | -  |
| 49  | 409 | Harvestable vegetative plant parts have reached final size<br>(Cutting of soybean plants for feeding purposes) |
| <b>Principal growth stage 5: Inflorescence emergence (Main shoot)</b>                             |     |  |
| 50  | 500 | -  |
| 51  | 501 | First flower buds visible  |
| 52  | 502 | -  |
| 53  | 503 | -  |
| 54  | 504 | -  |
| 55  | 505 | First flower buds enlarged   |
| 56  | 506 | -  |
| 57  | 507 | -  |
| 58  | 508 | -  |
| 59  | 509 | First flower petals visible; flower buds still closed  |
| <b>Principal growth stage 6: Flowering (Main shoot)</b>   |     |  |
| 60  | 600 | First flowers opened (sporadically in population)  |
| 61  | 601 | Beginning of flowering about 10% of flowers open <sup>3</sup><br>Beginning of flowering <sup>4</sup>           |
| 62  | 602 | About 20% of flowers open <sup>3</sup>   |
| 63  | 603 | About 30% of flowers open <sup>3</sup>   |
| 64  | 604 | About 40% of flowers open <sup>3</sup>   |
| 65  | 605 | Full flowering: about 50% of flowers open <sup>3</sup><br>Main period of flowering <sup>4</sup>                |
| 66  | 606 | About 60% of flowers open <sup>3</sup>   |
| 67  | 607 | Flowering declining <sup>3</sup>   |
| 68  | 608 | -  |
| 69  | 609 | End of flowering: first pods visible (approximately 5 mm length) <sup>3</sup>                                  |

<sup>2</sup> The stem elongation of the soybean plant (Principal growth stage 3) proceeds parallel to the leaf development. Therefore a coding in the principal growth stage 3 has been omitted.

<sup>3</sup> This definition refers to determinate varieties

<sup>4</sup> This definition refers to indeterminate varieties

| CODE   |     | DESCRIPTION   |
|--|-----|---|
| 2- and 3 digit   |     |   |
| <b>Principal growth stage 7: Development of fruits and seeds</b> |     |   |
| 70   | 700 | First pod reached final length (15-20 mm)   |
| 71   | 701 | About 10% of pods have reached final length (15-20 mm) <sup>3</sup><br>Beginning of pod development <sup>4</sup>  |
| 72   | 702 | About 20% of pods have reached final length (15-20 mm) <sup>3</sup>   |
| 73   | 703 | About 30% of pods have reached final length (15-20 mm) <sup>3</sup><br>Beginning of pod filling <sup>4</sup>  |
| 74   | 704 | About 40% of pods have reached final length (15-20 mm) <sup>3</sup>   |
| 75   | 705 | About 50% of pods have reached final length (15-20 mm)<br>Continuation of pod filling. <sup>3</sup> Main period of pod development<br>Continuation of pod filling <sup>4</sup>                  |
| 76   | 706 | -   |
| 77   | 707 | About 70% of pods have reached final length (15-20 mm):<br>advanced pod filling. <sup>3</sup> Advanced pod filling <sup>4</sup>   |
| 78   | 708 | -   |
| 79   | 709 | Approximately all pods have reached final length (15-20 mm).<br>Seeds filling the cavity of the majority of pods <sup>3,4</sup>   |
| <b>Principal growth stage 8: Ripening of fruits and seeds</b>    |     |   |
| 80   | 800 | First pod ripe, beans final color, dry and hard   |
| 81   | 801 | Beginning of ripening; about 10% of pods are ripe, beans final color, dry and hard. <sup>3</sup> Beginning of pod and seed ripening <sup>4</sup>  |
| 82   | 802 | About 20% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 83   | 803 | About 30% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 84   | 804 | About 40% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 85   | 805 | Advanced ripening; about 50% of pods are ripe; beans final color, dry and hard. <sup>3</sup> Main period of pod and seed ripening <sup>4</sup>  |
| 86   | 806 | About 60% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 87   | 807 | About 70% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 88   | 808 | About 80% of pods are ripe; beans final color, dry and hard <sup>3</sup>  |
| 89   | 809 | Full maturity: approximately all pods are ripe; beans final color, dry and hard<br>(= Harvest maturity) <sup>3</sup><br>Majority of pods are ripe; beans final color, dry and hard <sup>4</sup> |
| <b>Principal growth stage 9: Senescence</b>                      |     |   |
| 90   | 900 | -   |
| 91   | 901 | About 10% of leaves discolored or fallen  |
| 92   | 902 | About 20% of leaves discolored or fallen  |
| 93   | 903 | About 30% of leaves discolored or fallen  |
| 94   | 904 | About 40% of leaves discolored or fallen  |
| 95   | 905 | About 50% of leaves discolored or fallen  |
| 96   | 906 | About 60% of leaves discolored or fallen  |
| 97   | 907 | Above ground parts of plants dead   |
| 98   | 908 | -   |
| 99   | 909 | Harvested product (seeds)   |

<sup>3</sup> This definition refers to determinate varieties

<sup>4</sup> This definition refers to indeterminate varieties

9. Literature

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10. Technical Questionnaire

|  |   |   |
|--|---|---|
| TECHNICAL QUESTIONNAIRE  | Page {x} of {y}                         | Reference Number:   |
|  |   | Application date:<br>(not to be filled in by the applicant) |
| <b>TECHNICAL QUESTIONNAIRE</b><br>to be completed in connection with an application for plant breeders' rights |   |   |
| 1. Subject of the Technical Questionnaire  |   |   |
| 1.1  | Botanical name                          | <input type="text" value="Glycine max (L.) Merr."/>         |
| 1.2  | Common name                             | <input type="text" value="Soya Bean, Soybean"/>             |
| 2. Applicant   |   |   |
|  | Name                                    | <input type="text"/>  |
|  | Address                                 | <input type="text"/>  |
|  | Telephone No.                           | <input type="text"/>  |
|  | Fax No.                                 | <input type="text"/>  |
|  | E-mail address                          | <input type="text"/>  |
|  | Breeder (if different from applicant)   | <input type="text"/>  |
| 3. Proposed denomination and breeder's reference   |   |   |
|  | Proposed denomination<br>(if available) | <input type="text"/>  |
|  | Breeder's reference                     | <input type="text"/>  |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross

(please state parent variety)

(.....) x (.....)

female parent male parent

(b) partially known cross

(please state known parent variety(ies))

(.....) x (.....)

female parent male parent

(c) unknown cross

4.1.2 Mutation

(please state parent variety)

4.1.3 Discovery and development

(please state where and when discovered and how developed)

4.1.4 Other

(Please provide details)

# Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.



|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
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|                      |                                   |     |
|----------------------|-----------------------------------|-----|
| 4.2                  | Method of propagating the variety |     |
| 4.2.1                | Seed-propagated varieties         |     |
| (a)                  | Self-pollination                  | [ ] |
| (b)                  | Other (please provide details)    | [ ] |
| <input type="text"/> |                                   |     |
| 4.2.2                | Other<br>(Please provide details) | [ ] |
| <input type="text"/> |                                   |     |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

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

| Characteristics                                       | Example Varieties                | Note  |
|---|----------------------------------|-------|
| <b>5.1 Leaf: shape of lateral leaflet<br/>(4)</b>     |                                  |       |
| lanceolate  | Crina F, Opaline                 | 1 [ ] |
| triangular  | Sponsor                          | 2 [ ] |
| pointed ovate   | Es Gladiator, RGT Speeda         | 3 [ ] |
| round ovate   | Córdoba, Es Mentor, RGT Shouna   | 4 [ ] |
| <b>5.2 Plant: growth type<br/>(7)</b>                 |                                  |       |
| determinate   | NS 8288                          | 1 [ ] |
| semi determinate                                      | NS 6448                          | 2 [ ] |
| indeterminate   | 5407IPRO, DON MARIO 40R16        | 3 [ ] |
| <b>5.3 Plant: color of hairs on main stem<br/>(9)</b> |                                  |       |
| light brown   | 53I53 RSF IPRO                   | 1 [ ] |
| dark brown  | NS 8288                          | 2 [ ] |
| grey  | 5407IPRO, RA 750                 | 3 [ ] |
| <b>5.4 Flower: color<br/>(10)</b>                     |                                  |       |
| white   | 53I53 RSF IPRO                   | 1 [ ] |
| violet  | DON MARIO 40R16                  | 2 [ ] |
| <b>5.5 Time of maturity<br/>(11)</b>                  |                                  |       |
| very early  |                                  | 1 [ ] |
| very early to early                                   |                                  | 2 [ ] |
| early   | NS 2018                          | 3 [ ] |
| early to medium                                       | 3420, 3806IPRO                   | 4 [ ] |
| medium  | 47MS01, DON MARIO 40R16          | 5 [ ] |
| medium to late  | 53I53 RSF IPRO, 5407IPRO, RA 545 | 6 [ ] |
| late  | NS 6448                          | 7 [ ] |
| late to very late                                     | RA 750                           | 8 [ ] |
| very late   | 8473 RSF, VC 8080 IPRO           | 9 [ ] |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
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| Characteristics                                     | Example Varieties       | Note  |
|---|-------------------------|-------|
| <b>5.6 Pod: color</b><br><b>(13)</b>                |                         |       |
| light brown   | NS 2018                 | 1 [ ] |
| medium brown  | DON MARIO 40R16         | 2 [ ] |
| dark brown  |                         | 3 [ ] |
| light grey  |                         | 4 [ ] |
| medium grey   |                         | 5 [ ] |
| dark grey   |                         | 6 [ ] |
| black   |                         | 7 [ ] |
| <b>5.7 Seed: color of testa</b><br><b>(17)</b>      |                         |       |
| green   |                         | 1 [ ] |
| yellow green  | Befine                  | 2 [ ] |
| yellow  | DON MARIO 40R16         | 3 [ ] |
| red   |                         | 4 [ ] |
| light brown   |                         | 5 [ ] |
| medium brown  |                         | 6 [ ] |
| dark brown  |                         | 7 [ ] |
| purple  |                         | 8 [ ] |
| black   |                         | 9 [ ] |
| <b>5.8 Seed: glossiness</b><br><b>(18)</b>          |                         |       |
| absent or weak                                      | DON MARIO 40R16, RA 545 | 1 [ ] |
| medium  | NS 8288                 | 2 [ ] |
| strong  | 8473 RSF, TMG1155RR     | 3 [ ] |
| <b>5.9 Seed: coloration of hilum</b><br><b>(20)</b> |                         |       |
| imperfect yellow                                    | Ajico, OAC Strive       | 1 [ ] |
| yellow  | RA 545                  | 2 [ ] |
| light brown   | NS 6448                 | 3 [ ] |
| medium brown  | 5407IPRO                | 4 [ ] |
| red brown   | 53153 RSF IPRO          | 5 [ ] |
| grey  | TMG1155RR               | 6 [ ] |
| imperfect black                                     | RA 750                  | 7 [ ] |
| black   | DON MARIO 40R16         | 8 [ ] |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
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6. Similar varieties and differences from these varieties

*Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.*

| Denomination(s) of variety(ies) similar to your candidate variety | Characteristic(s) in which your candidate variety differs from the similar variety(ies) | Describe the expression of the characteristic(s) for the <b>similar</b> variety(ies) | Describe the expression of the characteristic(s) for <b>your</b> candidate variety |
|---|---|--|--|
| <i>Example</i>  | <i>Hypocotyl: anthocyanin coloration</i>  | <i>absent or very weak</i>   | <i>medium</i>  |
|   |   |  |  |
|   |   |  |  |
|   |   |  |  |

Comments:

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes  No

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes  No

(If yes, please provide details)

7.3 Other information

Indicate maturity group and subgroup of the variety

Group

Subgroup

# Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
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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 (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

|   |         |        |
|---|---------|--------|
| (a) Microorganisms (e.g. virus, bacteria, phytoplasma)    | Yes [ ] | No [ ] |
| (b) Chemical treatment (e.g. growth retardant, pesticide) | Yes [ ] | No [ ] |
| (c) Tissue culture  | Yes [ ] | No [ ] |
| (d) Other factors   | Yes [ ] | No [ ] |

Please provide details for where you have indicated "yes".

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature  Date

[End of document]