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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

Soya Bean

UPOV Code: GLYCI_MAX

Glycine max (L.) Merr.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by (an) expert(s) from Argentina

to be considered by the

*Technical Working Party for Agricultural Crops
 at its forty-fourth session
 to be held in Obihiro, Japan,
 from 2015-07-06
 to 2015-07-10*

Alternative Names:^{*}

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Glycine max</i> (L.) Merr., <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), 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:

2 kg.

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 similar growing periods.

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 second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

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 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 / 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 taken from each of 20 plants and any other observations made on all plants in the test, disregarding any off-type plants.

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 second column of 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 For the assessment of uniformity, a population standard of 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: growth type (characteristic 2)
- (b) Plant: color of hairs of main stem (on middle third) (characteristic 4)
- (c) Flower color (characteristic 12)
- (d) Seed: peroxidase test (coloration due to peroxidase activity in seed coat) (characteristic 20)
- (e) Seed: hilum color (characteristic 21)
- (f) Maturity Group (American Scale) (characteristic 25)

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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*

- (*) Asterisked characteristic – see Chapter 6.1.2
- QL Qualitative characteristic – see Chapter 6.3
- QN Quantitative characteristic – see Chapter 6.3
- PQ Pseudo-qualitative characteristic – see Chapter 6.3
- MG, MS, VG, VS – see Chapter 4.1.5

(a)-(b) See Explanations on the Table of Characteristics in Chapter 8.

(+) See Explanations on the Table of Characteristics in Chapter 8.

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
1. QL VG 10 (+)					
Hypocotyl: color					
green				DAVIS	1
green with bronze				BRAGG	2
light purple				ESSEX	3
purple					4
<hr/>					
2. QL VG (+) (a)					
Plant: growth type	Plante: type de croissance	Pflanze: Wuchstyp	Planta: porte		
determinate	déterminée	begrenzt wachsend	determinado	A 5777 RG, A 8000 RG, RA 538	1
semi-determinate				NS 6448, RA 625, RMO 75	2
semi-determinate to indeterminate					3
indeterminate	indéterminée	unbegrenzt wachsend	indeterminado	A 4505 RG, DON MARIO 5.9I, RA 728	4
<hr/>					
3. QL VG 66 (+) (a)					
Plant: growth habit					
erect					1
erect to semi-erect					2
semi-erect					3
semi -erect to horizontal					4
horizontal					5
<hr/>					
4. QL VG 65-85 (a)					
Plant: color of hairs of main stem (on middle third)					
grey				AYELEN 22	1
tawny					2
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
5. QL VG 65-85 (+) Plant: intensity of color of hairs of main stem (on middle third)					
light				A 4505 RG, ADM 4800, DON MARIO 3700, NS 4009	1
medium				A 3550 RG, NIDERA A 4990 RG, NIDERA A3933 RG	5
dark				A 3901RG, NIDERA A5209 RG, RA 728	9
<hr/>					
6. QN MG 85 (a) Plant: height					
short				CARLA, PARADIS, SPOT	3
short to medium				ESSOR, TRUMP	4
medium				Chandor	5
medium to tall				Kador	6
tall				TIROL, TOREADOR	7
<hr/>					
7. QN VG 65 (a) Leaf: blistering					
absent or very weak				Arpège, BAYOU, Chandor	1
weak				Kador, Quito	3
medium				Imari, Paoki	5
strong				Matador	7
very strong					9
<hr/>					
8. PQ VS 65 (a) Leaf: shape of central leaflet					
lanceolate				SP 7X0	1
triangular base-elongated leaflet				A 7118 RG	2
ovoid				Champaquí 5.7	3
elliptic				A 3550 RG	4
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
9. QN VS 65 (a)					
Leaf: size of lateral leaflet					
small				Arcade, Baron, Labrador, TRUMP	3
medium				Alaric, Kushiro, Talon	5
large				Williams	7
<hr/>					
10. QL VG 65					
Leaf: shape of lateral leaflet					
lancelotate					1
triangular					2
pointed ovate					3
rounded ovate					4
<hr/>					
11. QN VG 65 (a)					
Leaf: intensity of green color					
light				Arcade, Chandor, Junior	3
medium				Alaric, Apache, Imari	5
dark				Ardir, Cresir, Jedor, SPOT	7
<hr/>					
12. QL VS 66 (a)					
Flower color					
White				DON MARIO 5.9I	1
Violet				SP 7X0	2
<hr/>					
13. QL VG 85 (a)					
Pod: color					
tan				ALM 4650, AS 4402, AYELEN 22, DON MARIO 6.2I	1
tawny				A 3901 RG, A 4505 RG, Don Mario 7.0I, NIDERA A 4990 RG, NS 4009	2
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
14. QN VG 85 (+)					
(a)					
Pod: intensity of color					
light					1
medium					5
dark					9
<hr/>					
15. QN MG 89 (a)					
Seed: size					
small				Alba, Aurelia, Flusk GT 512	3
medium				Goldor, Queen	5
large				Cervin, Clédor, Mondor	7
<hr/>					
16. QL VG 89 (a)					
Seed: shape					
spherical					1
spherical flattened					2
elongated					3
elongated flattened					4
<hr/>					
17. PQ VG 89 (a)					
Seed: ground color of testa (excluding hilum)					
yellow				Paoki, Queen	1
yellow green					2
green					3
light brown					4
medium brown					5
dark brown					6
dark					7
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
18. QN VG 89 (a)					
Seed: intensity of yellow ground					
light					3
medium					5
dark					7
<hr/>					
19. QN MG VG 89					
(a)					
Seed: glossines of yellow testa					
opaque				CH 4308 RG	1
intermediate					2
bright				RA 732	3
<hr/>					
20. QL MG 89 (a)					
Seed: peroxidase test (coloration due to peroxidase activity in seed coat)					
positive (present)				Hood, Hood 75	1
mixture (present and absent)					2
negative (absent)				Bragg	3
<hr/>					
21. QL VG 89 (a)					
Seed: hilum color					
grey				Apache, Major, SPOT	1
yellow				Imari, Maple Arrow, Talon	2
light brown				Argenta, Baron, Kingsoy, Opale	3
intermediate brown					4
dark brown				Aurélia, Fransoy 242, Léman	5
imperfect black				Folio, Kador, Wells	6
black				Chandor, Paoki, Queen	7
light or intermediate brown and imperfect black					8
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
22. QL VG 89 (a)					
Seed: color of hilum funicle					
same as testa				Queen	1
different to testa				Gieso	2
<hr/>					
23. QN MG 19 (a)					
Plant: time of beginning of flowering (50% plants with at least one flower open)					
very early				CARLA, PARADIS, Sito, TRUMP	1
very early to early				Arcade, ESSOR, Labrador	2
early				Canton, Imari, Queen	3
early to medium				Alaric, Kador, Niva	4
medium				Williams	5
medium to late					6
late					7
late to very late					8
very late					9
<hr/>					
24. QN VG 89 (a)					
Plant: time of maturity					
very early				CARLA, Kola, PARADIS, Soléo, TRUMP	1
very early to early				Apache, Chandor, Labrador	2
early				Aurélia, Canton, Paoki, Queen	3
early to medium				Alaric, Kador, Kingsoy, Niva	4
medium				Williams	5
medium to late					6
late					7
late to very late					8
very late					9
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
<hr/>					
25. QN MG 89 (a)					
Maturity Group					
(American Scale)					
000					1
00					2
0					3
I					4
II				AYELEN 22	5
III				DON MARIO 3700	6
IV				CH 4308 RG	7
V				Champaquí 5.7, Don Mario 5.2, NIDERA A5209 RG	8
VI				DON MARIO 6.2I	9
VII				A 7118 RG, Don Mario 7.0I, RA 728, RA 732	10
VIII				Nidera A 8087 RG	11
IX				A 9000RG	12
X					13
<hr/>					
26. QN MG 10 (a)					
Behavior towards					
the Phytophthora					
sojae. Race 1					
susceptible				4.85 S	1
half resistant					5
resistant				DON MARIO 3700	9
<hr/>					
27. QN MG 10 (a)					
Behavior towards					
the Phytophthora					
megasperma var.					
sojae. Race 3					
susceptible				Don Mario 4870	1
intermediate					5
resistant				A 3302 RG	9
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
28. QN MG 10 (a) Behavior towards the Phytophthora megasperma var. sojae Race 4					
susceptible				Don Mario 4870	1
intermediate					5
resistant				A 3550 RG	9
<hr/>					
29. QN MG 10 (a) Behavior towards the Phytophthora megasperma var. sojae. Race 17					
susceptible				FN 4.85	1
intermediate					5
high				DON MARIO 3700	9
<hr/>					
30. QN MG 10 (a) Behavior towards the Phytophthora megasperma var. sojae. Race 25					
susceptible				A 3302 RG, Don Mario 4870	1
intermediate					5
resistant				L93-3312	9
<hr/>					
31. QN MG 10 (a) (b) Behavior towards the Diaphorte phaseolorum var. meridionalis					
highly susceptible					1
susceptible				RA 702	3
half susceptible					5
half resistant					7
resistant				DON MARIO 3700	9
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<hr/>					
<hr/>					
32. QN MG 13 (a) Behavior towards the Cercospora sojina Hara. Race 11					
susceptible					1
intermediate					5
resistant				DAVIS	9
<hr/>					
33. QN MG 13 (a) Behavior towards the Cercospora sojina Hara. Race 12					
susceptible					1
intermediate					5
resistant					9
<hr/>					
34. QL MG (a) Behavior towards Meloidgyne incognita					
susceptible					1
intermediate					5
resistant					9
<hr/>					
35. QL MG (a) Behavior towards Meloidogyne javanica					
susceptible					1
intermediate					5
resistant					9
<hr/>					
36. QL MG (a) Behavior towards Heterodera glycines					
susceptible					1
intermediate					5
resistant					9
<hr/>					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
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37. QL MG (a)

**Behavior towards
Lepidoptera**

susceptible

1

intermediate

5

resistant

9

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

(a)

Methodology to evaluate soybean cultivars' reaction towards *Phytophthora sojae*:

Available races: *P. sojae* R1, R3, R4, R17 and R25.

Income of races: SENASA DCV No. 19-17 March 2008. Dr. Anne Dorrance The Ohio State University".

Storage of the races: at 15°C on V8 diluted agar medium. Was requested a permission to SENASA to transfer races' copies in cryovials for deposit in the CEREMIC (Mycology Reference Centre, Fac. Of Cs. Bioq. And Farm., UNR, Rosario) in liquid nitrogen.

Example of resistant (R) and susceptible (S) varieties of soybean: seed samples provided by the companies. Soybean varieties: samples of pure seed and high physiological quality provided by the companies.

Inoculation technique: 3 pots are planted with 5 seeds each genotype. All normal seedlings, with a properly developed hypocotyle, are inoculated. For this, on a 1 cm. maden slit by an hypodermic needle syringe into the subcotyledonar area of 5-7 days old seedlings are inoculated with 40 µl of the pathogen grown in LBAS. Pots are placed in wet chamber for 18 hours and then are kept at 24°C for 5 days, in that moment the number of dead seedlings on total inoculated seedlings are registered. For each race of pathogen, resistant and susceptible genotypes are considered as cultivars examples.

Any reaction resulting in an intermediate reaction (I) is repeated (2 pots are planted with 5 seedlings each).

Evaluation: Resistant (0-25% plants dead); intermediate (26-75% plants killed); and susceptible (76-100% plants dead).

Example resistants varieties to R1: DM3700, to R3 A3302RG, to R4 A3550RG, to R17 DM3700, to R25 L93-3312.

Example susceptibles varieties to R1: FN4.85, to R3 and R4 DM4870, to R17 FN4.85, to R25 A3302 or DM4870.

(b)

Description of the methodology and the scale for the behavior towards stem canker (*Diaphorte phaseolorum* var. *meridionalis*)

Test of soybean genotype to *Diaphorte phaseolorum* var. *meridionalis* by the toothpick inoculation technique.

This protocol is based on two parts: preparation of fungal pathogen isolates and isolates-evaluation. The first part should be conducted in a sterile condition and the second in cleaned and disinfected conditions.

PART 1:

Preparation of *Diaphorte phaseolorum* var. *meridionalis* isolates:

Substrate: The substrate should be prepared in a petri plate of 90 mm in diametre. It consist of a filter paper where 150 pointed ends of toothpicks are inserted.

Paper: Boeco 3W-65 g/m² from Germany. Insert into a puncture whith a sterile needle in a uniform way.

Toothpicks: The pointed ends of the toothpicks are cut to a length of 1.2-1.5 centimetre. The toothpicks are boiled three times, air-dried and then it is put into the oven by two hours with a temperature over 100 degrees centigrade.

Method: The toothpicks are inserted in the paper where the sharp end is looking up into petri plate. The paper

must be soaked by the culture medium. Then it is put into a autoclave to be sterilized for twenty minutes with a temperature over 120°C.

The culture medium: 20 ml potato glucose agar (PGA) o dextrose.

Diaphorte phaseolorum var. meridionalis isolates are repeated in other petri plates during five days at 28°C. 5 pieces of paper of 5 mm in diametre are inolutated in the culture medium and then put over filtered paper with the toothpicks in similar distances. It incubates during 7-10 days at 20 °C, when the sharp end of toothpicks are colonized.

PART 2:

Inoculation:

2 repeats of 10-15 seedling are inoculated by genotype. 7-12 days after sowing the toothpick is inserted in the hypocotyl. Then they are put in a wet chamber (100% relative humidity and 27 °C during 72 hours).

Evaluation:

The evaluation is measured 25 days afeter the inoculation:

R: resistant 0-25% Death plants (DP)

MR: middle resistant 26-50% DP

MS: middle suceptible 51-75% DP

S: suceptible 76-90% DP

HS: Higly suceptible more than 90% DP

8.2 Explanations for individual characteristics

Ad. 1: Hypocotyl: color



GREEN WITH BRONZE BAND HYPOCOTYL / HIPOCOTILE VERDE CON BANDAS BRONCEADAS



GREEN HYPOCOTYL / HIPOCOTILE VERDE

Ad. 2: Plant: growth type

Layout: This characteristic should preferably be assessed in a special trial with 3 or 4 replicates of 20 plants each with about 9 cm between plants in the rows. Any border effect must be avoided.

– Plant material: Candidate and example varieties must be grown in groups according to their earliness at maturity (characteristic 20).

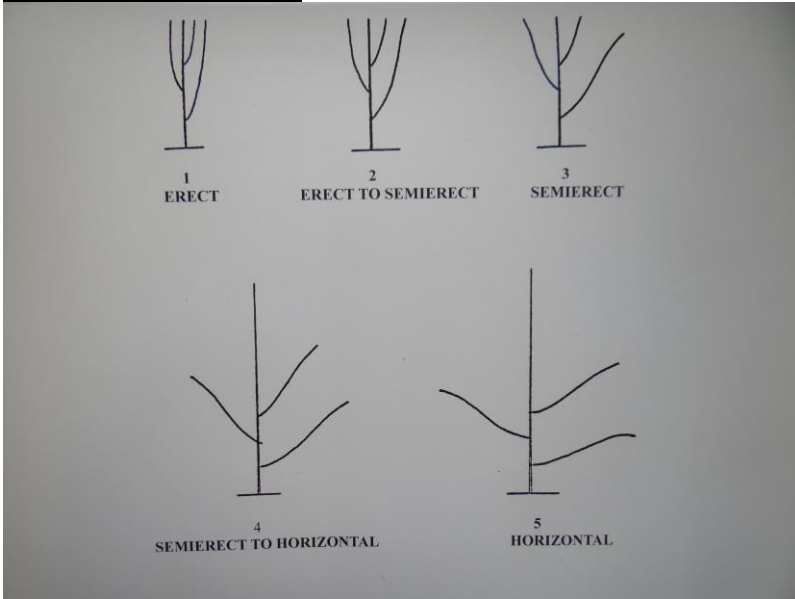
– Observation:

At the beginning of flowering time (1 flower at any level of the main stem), the apex of the plant must 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 per variety gives—in comparison with standard varieties—the state of expression of the characteristics.

In addition, the characteristic “Size of the terminal leaf” could also be considered to separate more clearly the state of expression “determinate” (Note 1) from other states. The terminal leaf on the main stem of determinate varieties is more or less equal to other leaves at lower levels. For other types, the terminal leaf is clearly smaller.

Ad. 3: Plant: growth habit



Ad. 5: Plant: intensity of color of hairs of main stem (on middle third)



1 - light



5 - medium



9 - dark

Ad. 14: Pod: intensity of color



9. Literature

Taylor, B.H, Caviness C.E, MAY - JUNE 1982, Hilum color variation in soybean seed with Imperfect Black genotype, Crop Science Vol. 22.

Pioli R.N, Morandi E.N. 2003 Morphologic, molecular, and pathogenic characterization of *Diaporthe phaseolorum* variability in the core soybean-producing area of Argentina. Vol 93, N° 2 136-146.

Dorrance A., Berry S.A.. 2008. Isolation, Storage, Pathotype Characterization, and Evolution of Resistance for *Phytophthora sojae* in soybean. Plant Management Network.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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TECHNICAL QUESTIONNAIRE
 to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire			
1.1.1	Botanical Name	Glycine max (L.) Merr.	
1.1.2	Common Name	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 (if available)	<input type="text"/>
Breeder's reference	<input type="text"/>

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 varieties)

(.....) 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)

[.....]

4.2 Method of propagating the variety

4.2.1 Other

(please provide details)

.....
:
:
:
.....

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
5.1 (4) Plant: color of hairs of main stem (on middle third)		
grey	AYELEN 22	1[]
tawny		2[]
5.2 (20) Seed: peroxidase test (coloration due to peroxidase activity in seed coat)		
positive (present)	Hood, Hood 75	1[]
mixture (present and absent)		2[]
negative (absent)	Bragg	3[]

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 similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>			
<p>Comments:</p>			

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

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.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:												
<p>9. Information on plant material to be examined or submitted for examination</p> <p>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.</p> <p>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:</p> <table data-bbox="239 560 1356 761"><tr><td>(a) Microorganisms (e.g. virus, bacteria, phytoplasma)</td><td>Yes []</td><td>No []</td></tr><tr><td>(b) Chemical treatment (e.g. growth retardant, pesticide)</td><td>Yes []</td><td>No []</td></tr><tr><td>(c) Tissue culture</td><td>Yes []</td><td>No []</td></tr><tr><td>(d) Other factors</td><td>Yes []</td><td>No []</td></tr></table> <p>Please provide details for where you have indicated "yes".</p> <p>.....</p>			(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 []
(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 []												
<p>10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:</p> <table data-bbox="223 1052 1404 1254"><tr><td data-bbox="223 1052 494 1131">Applicant's name</td><td colspan="2" data-bbox="494 1052 1404 1131"><input type="text"/></td></tr><tr><td data-bbox="223 1131 494 1254">Signature</td><td data-bbox="494 1131 981 1254"><input type="text"/></td><td data-bbox="981 1131 1404 1254">Date <input type="text"/></td></tr></table>			Applicant's name	<input type="text"/>		Signature	<input type="text"/>	Date <input type="text"/>						
Applicant's name	<input type="text"/>													
Signature	<input type="text"/>	Date <input type="text"/>												

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