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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

GINSENG

UPOV Code(s): PANAX_GIN

Panax ginseng C.A. Mey.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the Republic of Korea
to be considered by the
Enlarged Editorial Committee
at its meeting, to be held in Geneva
on March 24, 2020

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Panax ginseng C.A. Mey.	Ginseng	Ginseng	Ginseng	Ginseng

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 *Panax ginseng* C.A. Mey..

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:

200g 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 a single growing cycle.

3.1.2 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 8.3.

3.3.3 Observations should be made on plants with four or five palmately compound leaves (4 to 5 year old plants).

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between at least 3 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 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.

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 3% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 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 or plant 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) Leaflet: shape (characteristic 16)
(b) Inflorescence: attitude of cluster (characteristic 23)
(c) Berry: color (characteristic 24)

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ 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 8.2

6 (a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.3

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.		**QN MG**	**(+)**	**1**			
		Time of sprouting	**Époque de démarrage**	**Zeitpunkt des Austriebs**	**Época de brotación**		
		early	précoce	früh	temprana	Geumsun, Sunpoong, Chungsun	3
		medium	moyenne	mittel	media	Yunpoong	5
		late	tardive	spät	tardía	Chunpoong, Kowon, Sunun, K-1	7
2.		**QN VG**		**3**			
		Plant: tendency to form more than one stem	**Plante : tendance à former plusieurs tiges**	**Pflanze: Neigung zur Bildung von mehr als einem Trieb**	**Planta: tendencia a formar más de un tallo**		
		weak	faible	gering	débil	Chunpoong	1
		medium	moyenne	mittel	media	Kowon	3
		strong	forte	stark	fuerte	Yunpoong	5
3.	**(*)**	**QN MS/VG**	**(+) (a)**	**3**			
		Stem: length	**Tige : longueur**	**Stängel: Länge**	**Tallo: longitud**		
		short	courte	kurz	corta	Yunpoong	3
		medium	moyenne	mittel	media	Gumpoong	5
		long	longue	lang	larga	Geumsun, Chunpoong	7
4.		**QN MS/VG**	**(+) (a)**	**3**			
		Stem: thickness	**Tige : épaisseur**	**Stängel: Dicke**	**Tallo: grosor**		
		thin	fine	dünn	delgado	Chunpoong	3
		medium	moyenne	mittel	mediano	Chungsun, K-1	5
		thick	épaisse	dick	grueso	Gopoong, Sunpoong	7
5.	**(*)**	**QN VG**	**(a)**	**3**			
		Stem: intensity of anthocyanin coloration	**Tige : intensité de la pigmentation anthocyanique**	**Stängel: Intensität der Anthocyanfärbung**	**Tallo: intensidad de la pigmentación antociánica**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Chungsun, Gumpoong	1
		weak	faible	gering	débil	Cheonryang, Chunpoong, Kowon, Yunpoong	3
		medium	moyenne	mittel	media	Sunun, Sunpoong	5
		strong	forte	stark	fuerte	Gopoong, K-1	7
		very strong	très forte	sehr stark	muy fuerte		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**(*)**	**PQ VG**	**(a)**	**3**			
		Stem: distribution of anthocyanin coloration	**Tige : répartition de la pigmentation anthocyanique**	**Stängel: Verteilung der Anthocyanfärbung**	**Tallo: distribución de la pigmentación antociánica**		
		on lower part only	sur la partie inférieure uniquement	nur am unteren Teil	solo en la parte inferior	Chunpoong	1
		on lower and upper parts	sur les parties inférieure et supérieure	am unteren und am oberen Teil	en la parte inferior y la superior	Yunpoong	2
		throughout	partout	überall	en la totalidad	Sunhyang, Gopoong	3
7.		**QN MS**	**(+)** **(b)**	**3**			
		Petiole: length	**Pétiole : longueur**	**Blattstiel: Länge**	**Pecíolo: longitud**		
		short	courte	kurz	corta	Cheonryang	3
		medium	moyenne	mittel	media	Gumpoong	5
		long	longue	lang	larga	Kowon	7
8.	**(*)**	**QN VG**	**(b)**	**3**			
		Petiole: intensity of anthocyanin coloration	**Pétiole : intensité de la pigmentation anthocyanique**	**Blattstiel: Intensität der Anthocyanfärbung**	**Pecíolo: intensidad de la pigmentación antociánica**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o débil	Chungsun, Gumpoong	1
		weak	faible	gering	débil	Chunpoong	3
		medium	moyenne	mittel	media	Cheonryang	5
		strong	forte	hoch	fuerte	Gopoong, K-1	7
		very strong	très forte	sehr hoch	muy fuerte		9
9.		**QN VG**	**(+)** **(b)**	**3**			
		Petiole: attitude	**Pétiole : port**	**Blattstiel: Haltung**	**Pecíolo: porte**		
		erect	dressé	aufrecht	erecto	Chunpoong	1
		semi erect	demi-dressé	halbaufrecht	semierecto	Yunpoong	3
		spreading	étalé	schräg abstehend	extendido	Gopoong	5
10.		**QN MS/VG**	**(+)** **(b)**	**3**			
		Petiolule: length	**Pétiolule : longueur**	**Blattstiel: Länge**	**Peciólulo: longitud**		
		short	courte	kurz	corta	Chunpoong, Sunhyang, Yunpoong	3
		medium	moyenne	mittel	media	Cheonryang, Gumpoong	5
		long	longue	lang	larga	Sunpoong	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**(*)**	**QL VG**	**(+) (b)**	**3**			
		Leaf: additional leaflets	**Feuille : folioles supplémentaires**	**Blatt: zusätzliche Blattfiedern**	**Hoja: folíolos adicionales**		
		absent	absentes	fehlend	ausentes	Gopoong	1
		present	présentes	vorhanden	presentes	Yunpoong	9
12.		**QN VG**	**(b)**	**3**			
		Leaf: blistering	**Feuille : cloqûre**	**Blatt: Blasigkeit**	**Hoja: abullonado**		
		weak	faible	gering	débil	K-1	1
		medium	moyenne	mittel	medio	Gumpoong	2
		strong	forte	stark	fuerte	Sunun	3
13.		**QN VG**	**(b)**	**3**			
		Leaf: intensity of green color	**Feuille : intensité de la couleur verte**	**Blatt: Intensität der Grünfärbung**	**Hoja: intensidad del color verde**		
		light	claire	hell	clara	Chunpoong	1
		medium	moyenne	mittel	media	Yunpoong	3
		dark	foncée	dunkel	oscura	Sunwon	5
14.		**QN MS/VG**	**(+) (c)**	**3**			
		Leaflet: length	**Foliole : longueur**	**Blattfieder: Länge**	**Folíolo: longitud**		
		short	courte	kurz	corta	Yunpoong	3
		medium	moyenne	mittel	media	Kowon, Chunpoong	5
		long	longue	lang	larga	Gumpoong	7
15.		**QN MS/VG**	**(+) (c)**	**3**			
		Leaflet: width	**Foliole : largeur**	**Blattfieder: Breite**	**Folíolo: anchura**		
		narrow	étroite	schmal	estrecha	Chunpoong	3
		medium	moyenne	mittel	media	Gopoong	5
		broad	large	breit	ancha	Sunhyang, Gumpoong	7
16.	**(*)**	**PQ VG**	**(+) (c)**	**3**			
		Leaflet: shape	**Foliole : forme**	**Blattfieder: Form**	**Folíolo: forma**		
		narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Chunpoong	1
		broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Sunhyang, Gopoong	2
		oblong	oblongue	rechteckig	oblonga	Gumpoong	3
		spatulate	spatulée	spatelförmig	espatulada		4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.		**QN VG**	**(+) (c)**	**3**			
		Leaflet: shape in cross section	**Foliole : forme en coupe transversale**	**Blattfieder: Form im Querschnitt**	**Folíolo: forma en sección transversal**		
		concave	concave	konkav	cóncava	Chunpoong	1
		flat	plane	flach	plana	Kowon	2
		convex	convexe	konvex	convexa	Cheonryang, K-1	3
18.	**(*)**	**QN VG**	**(+) (c)**	**3**			
		Leaflet: serration of margin	**Foliole : dentelure du bord**	**Blattfieder: Randeinschnitte**	**Folíolo: serrado del margen**		
		weak	faible	gering	débil	Chunpoong	1
		medium	moyenne	mittel	medio	Yunpoong	2
		strong	forte	stark	fuerte	Sunun	3
19.	**(*)**	**QN MG**	**(+)**	**2**			
		Time of beginning of flowering	**Époque de début de floraison**	**Zeitpunkt des Blühbeginns**	**Época de inicio de la floración**		
		early	précoce	früh	temprana	Sunpoong	3
		medium	moyenne	mittel	media	K-1, Yunpoong	5
		late	tardive	spät	tardía	Chunpoong	7
20.	**(*)**	**QN VG**	**(+)**	**2**			
		Inflorescence: length of peduncle	**Inflorescence : longueur du pédoncule**	**Blütenstand: Länge des Blütenstandstiels**	**Inflorescencia: longitud del pedúnculo**		
		short	courte	kurz	corta	Yunpoong	3
		medium	moyenne	mittel	media	Gumpoong	5
		long	longue	lang	larga	Sunpoong	7
21.	**(*)**	**QL VG**	**(+)**	**2**			
		Inflorescence: type	**Inflorescence : type**	**Blütenstand: Typ**	**Inflorescencia: tipo**		
		simple	simple	einfach	simple	Yunpoong	1
		intermediate	intermédiaire	Zwischentyp	intermedia	Gumpoong	2
		compound	étoilée	zusammengesetzt	compuesta	Sunun	3
22.	**(*)**	**QN MG**	**(+)**	**3**			
		Berry: time of maturity	**Baie : époque de maturité**	**Beere: Reifezeit**	**Baya: época de madurez**		
		early	précoce	früh	temprana	Gumpoong	3
		medium	moyenne	mittel	media	Yunpoong	5
		late	tardive	spät	tardía	Chunpoong	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. (*)	**QN VG**	**(+)**	**3**			
	Inflorescence: attitude of cluster	**Inflorescence : port de la grappe**	**Blütenstand: Haltung der Dolde**	**Inflorescencia: porte del racimo floral**		
	semi erect	demi-dressé	halbaufrecht	semierecto	Gopoong, K-1	1
	horizontal	horizontale	waagerecht	horizontal	Chunpoong, Gumpoong	3
	reflexed	récurvé	zurückgebogen	reflejo	Yunpoong	5
24. (*)	**PQ VG**		**3**			
	Berry: color	**Baie : couleur**	**Beere: Farbe**	**Baya: color**		
	yellow	jaune	gelb	amarillo	Gumpoong	1
	yellowish orange	orange jaunâtre	gelblichorange	naranja amarillento	Cheonmyeong	2
	reddish pink	rose rougeâtre	rötlichrosa	rosa rojizo	Chunpoong	3
	red	rouge	rot	rojo	K-1, Kowon, Sunpoong, Yunpoong	4
25. (*)	**PQ VG**		**4**			
	Leaf: color at senescence	**Feuille : couleur à la sénescence**	**Blatt: Farbe bei Alterung**	**Hoja: color en la senescencia**		
	yellow	jaune	gelb	amarillo	Gumpoong	1
	yellowish orange	orange jaunâtre	gelblichorange	naranja amarillento	Chunpoong	2
	red	rouge	rot	rojo	Gopoong, K-1, Yunpoong	3
26. (*)	**QN MS/VG**	**(+)**	**4**			
	Main root: diameter	**Racine principale : diamètre**	**Hauptwurzel: Durchmesser**	**Raíz principal: diámetro**		
	small	petit	klein	pequeño	Chunpoong	3
	medium	moyen	mittel	medio	Cheonryang, Gumpoong	5
	large	grand	groß	grande	Cheonmyeong, Yunpoong	7
27. (*)	**QN MS/VG**		**4**			
	Main root: length	**Racine principale : longueur**	**Hauptwurzel: Länge**	**Raíz principal: longitud**		
	short	courte	kurz	corta	Yunpoong	3
	medium	moyenne	mittel	media	Gopoong	5
	long	longue	lang	larga	Chunpoong, Gumpoong	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.	**QL** **VG**		**4**			
	Main root: skin color	**Racine principale : couleur de la peau**	**Hauptwurzel: Farbe der Schale**	**Raíz principal: color de la epidermis**		
	whitish	blanchâtre	weißlich	blanquecino	Chunpoong	1
	yellowish	jaunâtre	gelblich	amarillento	Yunpoong	2
29.	**QN** **VG**		**4**			
	Root: number of rootlets	**Racine : nombre de radicelles**	**Wurzel: Anzahl an dünnen Wurzeln**	**Raíz: número de raicillas**		
	few	petit	gering	bajo	Chunpoong	3
	medium	moyen	mittel	medio	Sunpoong	5
	many	élevé	hoch	alto	Gopoong, K-1	7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations should be made on the longest stem among stems.

(b) Observations should be made on the largest fully developed leaf.

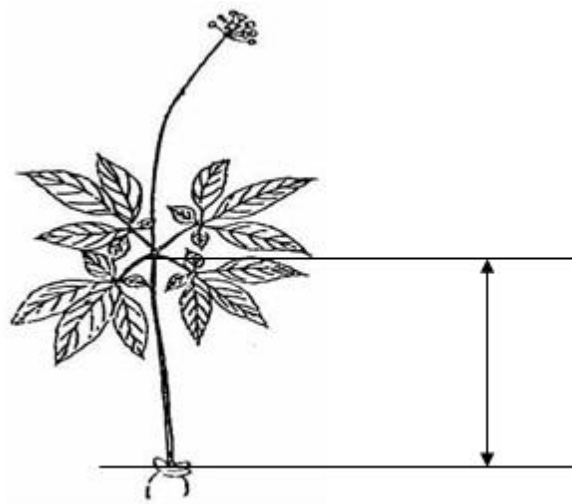
(c) Observations should be made on the central leaflet of palmately compound leaf.

8.2 Explanations for individual characteristics

Ad. 1: Time of sprouting

Time of sprouting is when 50% of the plants have sprouted.

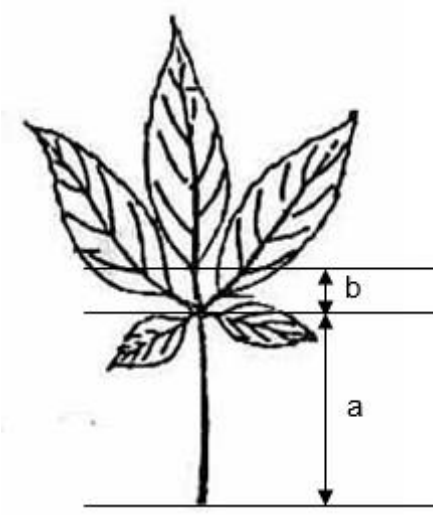
Ad. 3: Stem: length



Ad. 4: Stem: thickness

Measure the broadest part of stem, usually 2-3 cm from soil surface.

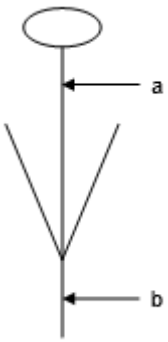
Ad. 7: Petiole: length



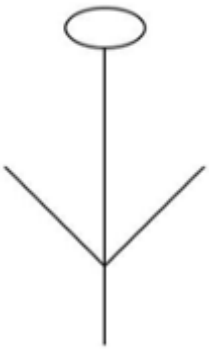
a = Petiole: length
b = Petiolule: length

Ad. 9: Petiole: attitude

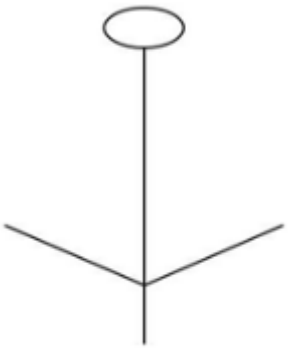
a = Peduncle
b = Stem



1
erect



3
semi erect

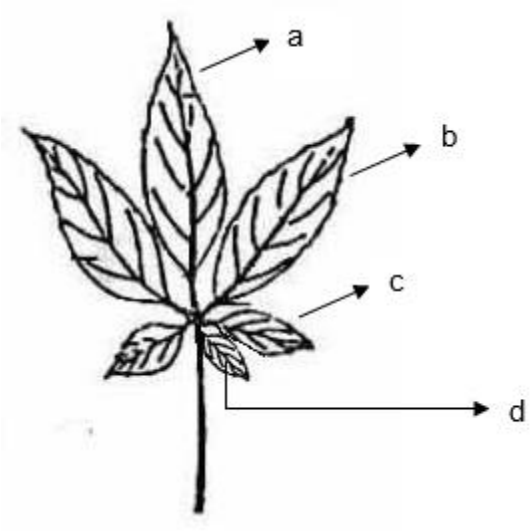


5
spreading

Ad. 10: Petiolule: length

See Ad. 7

Ad. 11: Leaf: additional leaflets



a = Central leaflet
b = First lateral leaflet
c = Second lateral leaflet
d = Additional leaflet

Ad. 14: Leaflet: length

Ad. 15: Leaflet: width

Ad. 16: Leaflet: shape

oblong = the bottom part is rounded

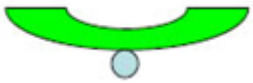
1
narrow elliptic

2
broad elliptic

3
oblong

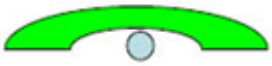
4
spatulate

Ad. 17: Leaflet: shape in cross section



1
concave

2
flat



3
convex

Ad. 18: Leaflet: serration of margin

1
weak

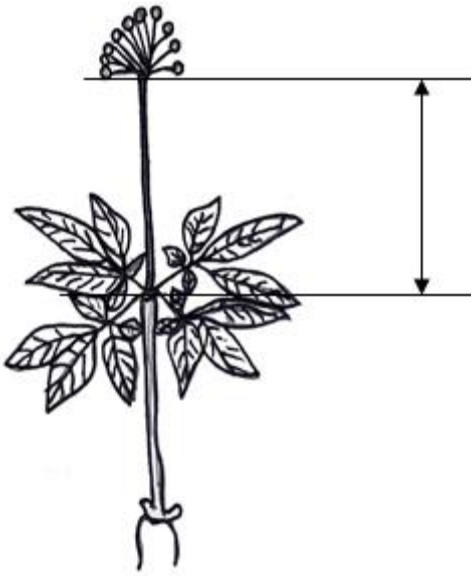
2
medium

3
strong

Ad. 19: Time of beginning of flowering

Beginning of flowering is when about 10% of the plants have at least one floret.

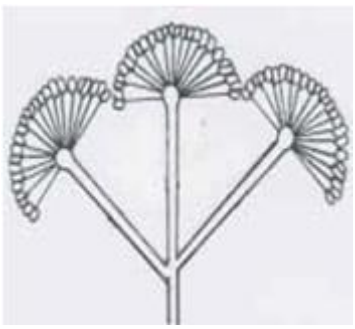
Ad. 20: Inflorescence: length of peduncle



Ad. 21: Inflorescence: type

1
simple

2
intermediate



3
compound

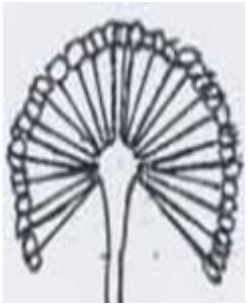
Ad. 22: Berry: time of maturity

Observations should be made when 50% of plants have fully ripe berries.

Ad. 23: Inflorescence: attitude of cluster

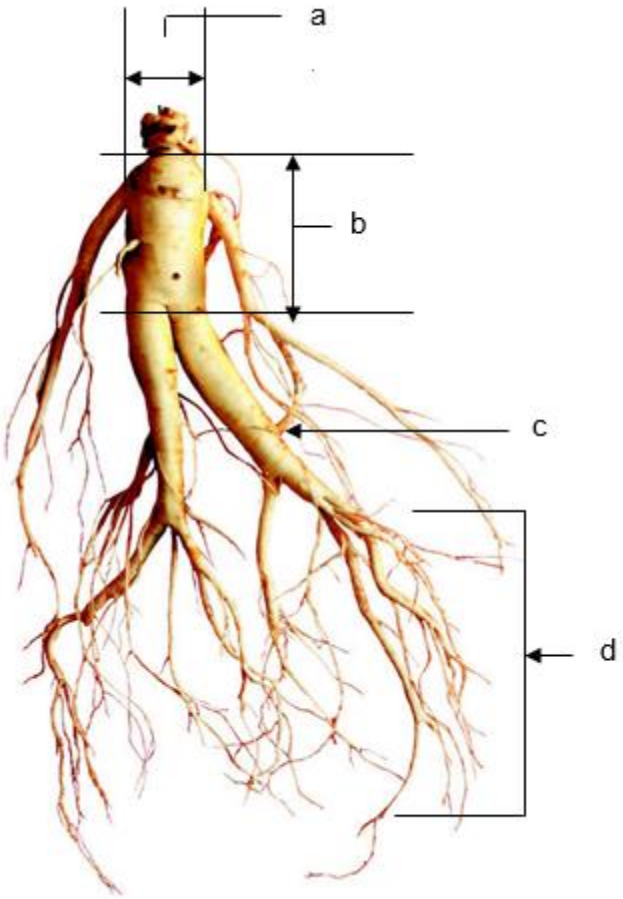
1
semi erect

3
horizontal



5
reflexed

Ad. 26: Main root: diameter



a = Main root: diameter
b = Main root: length
c = Lateral root
d = Rootlet

8.3 Typical morphological characteristics by yearly growth

1 = Sprouting
2 = Flowering
3 = Berry maturity
4 = Leaf senescence and root harvest

9. Literature

British Columbia, Ministry of Agriculture, Fisheries and Food, 1998: Ginseng production guide for commercial growers. Victoria B. C., British Columbia, CA.

Kim Y. C., Kim. J. U., Lee J. W., Jo I. H., Bang K. H., Kim D. H., Hyun D. Y., Oh T. K., Shinogi Y., Lee C. H., 2017: The classification of the morphological characteristics of aerial vegetative tissues in a large germplasm collection of Korean ginseng (*panax* sp.). Journal of the Faculty of Agriculture, Kyushu University. JP. 62(1), pp. 69-74.

Kwon W. S., Lee M. G., Lee J. H., 2001: Characteristics of flowering and fruiting in new varieties and lines of *Panax ginseng* C.A. Meyer. Journal of Ginseng Research. KR. 25(1), pp. 41-44.

Scott Persons W., 1994: American ginseng green gold. Bright Mountain Books, Inc., Fairview, North Carolina, US.

10. Technical Questionnaire

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

	Application date: (not to be filled in by the applicant)

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

1. Subject of the Technical Questionnaire

1.1	Botanical name	*Panax ginseng* C.A. Mey.
1.2	Common name	Ginseng

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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 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)

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:

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Other (please provide details) [ ]

4.2.2 Other [ ]
(Please provide details)

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
5.1 (5)	**Stem: intensity of anthocyanin coloration**		
	absent or very weak	Chungsun, Gumpoong	1 [ ]
	very weak to weak		2 [ ]
	weak	Cheonryang, Chunpoong, Kowon, Yunpoong	3 [ ]
	weak to medium		4 [ ]
	medium	Sunpoong, Sunun	5 [ ]
	medium to strong		6 [ ]
	strong	Gopoong, K-1	7 [ ]
	strong to very strong		8 [ ]
	very strong		9 [ ]
5.2 (6)	**Stem: distribution of anthocyanin coloration**		
	on lower part only	Chunpoong	1 [ ]
	on lower and upper parts	Yunpoong	2 [ ]
	throughout	Gopoong, Sunhyang	3 [ ]
5.3 (8)	**Petiole: intensity of anthocyanin coloration**		
	absent or very weak	Chungsun, Gumpoong	1 [ ]
	very weak to weak		2 [ ]
	weak	Chunpoong	3 [ ]
	weak to medium		4 [ ]
	medium	Cheonryang	5 [ ]
	medium to strong		6 [ ]
	strong	Gopoong, K-1	7 [ ]
	strong to very strong		8 [ ]
	very strong		9 [ ]
5.4 (11)	**Leaf: additional leaflets**		
	absent	Gopoong	1 [ ]
	present	Yunpoong	9 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (16)	**Leaflet: shape**		
	narrow elliptic	Chunpoong	1 [ ]
	broad elliptic	Gopoong, Sunhyang	2 [ ]
	oblong	Gumpoong	3 [ ]
	spatulate		4 [ ]
5.6 (19)	**Time of beginning of flowering**		
	very early		1 [ ]
	very early to early		2 [ ]
	early	Sunpoong	3 [ ]
	early to medium		4 [ ]
	medium	K-1, Yunpoong	5 [ ]
	medium to late		6 [ ]
	late	Chunpoong	7 [ ]
	late to very late		8 [ ]
	very late		9 [ ]
5.7 (21)	**Inflorescence: type**		
	simple	Yunpoong	1 [ ]
	intermediate	Gumpoong	2 [ ]
	compound	Sunun	3 [ ]
5.8 (23)	**Inflorescence: attitude of cluster**		
	semi erect	Gopoong, K-1	1 [ ]
	semi erect to horizontal		2 [ ]
	horizontal	Chunpoong, Gumpoong	3 [ ]
	horizontal to reflexed		4 [ ]
	reflexed	Yunpoong	5 [ ]
5.9 (24)	**Berry: color**		
	yellow	Gumpoong	1 [ ]
	yellowish orange	Cheonmyeong	2 [ ]
	reddish pink	Chunpoong	3 [ ]
	red	K-1, Kowon, Sunpoong, Yunpoong	4 [ ]

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

	Characteristics	Example Varieties	Note
5.10 (25)	**Leaf: color at senescence**		
	yellow	Gumpoong	1 [ ]
	yellowish orange	Chunpoong	2 [ ]
	red	Gopoong, K-1, Yunpoong	3 [ ]
5.11 (26)	**Main root: diameter**		
	very small		1 [ ]
	very small to small		2 [ ]
	small	Chunpoong	3 [ ]
	small to medium		4 [ ]
	medium	Cheonryang, Gumpoong	5 [ ]
	medium to large		6 [ ]
	large	Cheonmyeong, Yunpoong	7 [ ]
	large to very large		8 [ ]
	very large		9 [ ]
5.12 (27)	**Main root: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Yunpoong	3 [ ]
	short to medium		4 [ ]
	medium	Gopoong	5 [ ]
	medium to long		6 [ ]
	long	Chunpoong, Gumpoong	7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]

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

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
Example	*Berry: color*	*yellow*	*red*

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

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:

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]