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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

<p>CHICK-PEA</p> <p>UPOV code: CICER_ARI</p> <p>(<i>Cicer arietinum</i> L.)</p>

*

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

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Cicer arietinum</i> L.	Chick-Pea	Pois chiche	Kichererbse	Garbanzo

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 *Cicer arietinum* L.

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:

3 000 seeds

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*

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

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 recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

3.4 *Test Design*

Each test should be designed to result in a total of at least 100 plants, which should be divided between two or more replicates.

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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 20 plants or parts taken from each of 20 plants.

3.6 *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.

4.2 *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 1 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 100 plants, 3 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 tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous 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) Flower: color (characteristic 7)
- (b) Seed: color (1 month after harvest) (characteristic 13)
- (c) Seed: shape (characteristic 16)
- (d) Seed: ribbing (characteristic 17)
- (e) Time of flowering (80% of plants with at least one flower) (characteristic 18)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

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*

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.

6.3 *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: single measurement of a group of plants or parts of plants – see Chapter 3.3.2

MS: measurement of a number of individual plants or parts of plants - see Chapter 3.3.2

VG: visual assessment by a single observation of a group of plants or parts of plants - see Chapter 3.3.2

VS: visual assessment by observation of individual plants or parts of plants - see Chapter 3.3.2

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

(+) 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
1. MS/ (*) VS	Plant: habit (after flowering)	Plante: port (après floraison)	Pflanze: Wuchsform (nach der Blüte)	Planta: porte (después de la floración)		
QN	erect	dressé	aufrecht	erecto	Cascari, Casoar, Castor, Jazz Sombrero	1
	semi-erect	demi-dressé	halbaufrecht	semierecto	Flamenco, Lambada	3
	prostrate	étalé	liegend	postrado	Sirtaki	5
2. VS	Plant: ramification	Plante: ramification	Pflanze: Verzweigung	Planta: ramificación		
QN (a)	weak	faible	gering	débil	Castor, Jazz, Lambada	3
	medium	moyenne	mittel	media	Cascari, Rondo, Sombrero, Flamenco	5
	strong	forte	stark	fuerte		7
3. MS/ (*) VG	Plant: height (when pods fully developed)	Plante: hauteur (à complet développement des gousses)	Pflanze: Höhe (wenn Hülsen voll entwickelt)	Planta: altura (cuando las vainas estén completamente desarrolladas)		
QN	short	courte	niedrig	baja	Castor, Sombrero	3
	medium	moyenne	mittel	media	Cabri, Cascari, Sirtaki, Twist	5
	tall	haute	hoch	alta	Elvar, Lambada, Salsa	7
4. VS (*)	Stem: anthocyanin coloration	Tige: coloration anthocyanique	Stengel: Anthocyanfärbung	Tallo: pigmentación antocianica		
QL (a)	absent	absente	fehlend	ausente	Sirtaki, Twist, Flamenco	1
	present	présente	vorhanden	presente	Castor, Sombrero	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. VS (*)	Foliage: intensity of green color	Feuillage: intensité de la couleur verte	Laub: Intensität der Grünfärbung	Follaje: intensidad del color verde		
QN (a)	light	claire	hell	claro	Sirtaki	3
	medium	moyenne	mittel	medio	Cascari, Salsa	5
	dark	foncée	dunkel	oscuro	Lambada, Rondo, Sombrero	7
6. MS/VS (*)	Leaflet: size	Foliolle: taille	Blattfieder: Größe	Foliolo: tamaño		
QN (a)	very small	très petite	sehr klein	muy pequeño	Castor	1
	small	petite	klein	pequeño	Flamenco, Sirtaki	3
	medium	moyenne	mittel	medio	Cascari, Salsa, Twist	5
	large	grande	groß	grande	Casoar, Flamenco	7
	very large	très grande	sehr groß	muy grande	Lambada	9
7. VG (*)	Flower: color	Fleur: couleur	Blüte: Farbe	Flor: color		
QL	white	blanche	weiß	blanco	Sirtaki, Twist	1
	purplish pink	rose pourpre	purpurrosa	rosa violáceo	Castor, Sombrero	2
8. MS/VS (*)	Pod: peduncle length	Gousse: longueur du pédoncule	Hülse: Länge des Stiels	Vaina: longitud del pedúnculo		
QN (b)	short	court	kurz	corta	Castor, Sombrero	3
	medium	moyen	mittel	media	Cascari	5
	long	long	lang	larga	Flamenco, Jazz	7
9. VS (*)	Pod: size	Gousse: taille	Hülse: Größe	Vaina: tamaño		
QN (b)	very small	très petite	sehr klein	muy pequeño	Castor	1
	small	petite	klein	pequeño		3
	medium	moyenne	mittel	medio	Rondo	5
	large	grande	groß	grande	Jazz	7
	very large	très grande	sehr groß	muy grande	Flamenco	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.	VG	Pod: intensity of green color	Gousse: intensité de la couleur verte	Hülse: Intensität der Grünfärbung	Vaina: intensidad del color verde	
QN	(b)	light	claire	hell	claro	3
		medium	moyenne	mittel	medio	Cascari, Flamenco, Twist 5
		dark	foncée	dunkel	oscuro	Sombrero 7
11.	MS/ VS	Pod: length of beak	Gousse: longueur du bec	Hülse: Länge des Schnabels	Vaina: longitud del pico	
QN	(b)	short	court	kurz	corta	Sombrero 3
		medium	moyen	mittel	media	Cascari, Castor, Sirtaki 5
		long	long	lang	larga	Flamenco, Jazz 7
12.	MS (* (+)	Pod: number of seeds	Gousse: nombre de graines	Hülse: Anzahl Samen	Vaina: número de semillas	
QN		predominantly one	essentiellement une	vorwiegend einer	predominantemente una	Twist 1
		one and two	une et deux	einer und zwei	una y dos	Elvar, Flamenco 2
		predominantly two	essentiellement deux	vorwiegend zwei	predominantemente dos	Cascari, Sombrero 3
13.	VG (*	Seed: color (1 month after harvest)	Graine: couleur (1 mois après récolte)	Samen: Farbe (1 Monat nach der Ernte)	Semilla: color (1 mes después de la cosecha)	
PQ		yellow	jaune	gelb	amarillo	1
		beige	beige	beige	beige	Cabri, Sirtaki 2
		yellowish brown	brun jaunâtre	gelblichbraun	marrón amarillento	3
		brown	brune	braun	marrón	Castor 4
		reddish brown	brun rougeâtre	rötlichbraun	marrón rojizo	E04 5
		black	noire	schwarz	negro	Sombrero 6

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14.	VG	Seed: intensity of color (as for 13)	Graine: intensité de la couleur (comme pour 13)	Samen: Intensität der Farbe (wie unter 13)	Semilla: intensidad del color (como en 13)	
QN	light	claire	hell	claro		3
	medium	moyenne	mittel	medio		5
	dark	foncée	dunkel	oscuro		7
15.	MG	Seed: weight	Graine: poids	Samen: Gewicht	Semilla: peso	
	(*) (+)					
QN	low	petit	gering	bajo	Pedrosillano	3
	medium	moyen	mittel	medio	Amparo, Amit, Cabri, Cascari	5
	high	élevé	hoch	alto	Bianka, Castellano, Jazz	7
	very high	très élevé	sehr hoch	muy alto	Blanco lechoso, Lambada, Salsa	9
16.	VG	Seed: shape	Graine: forme	Samen: Form	Semilla: forma	
	(*) (+)					
PQ	round	ronde	rund	redonda	Cascari, Elvar	1
	round to angular	ronde à angulaire	rund bis kantig	entre redonda y angular	Flamenco, Sirtaki	2
	angular	angulaire	kantig	angular	Castor, Sombrero	3
17.	VG	Seed: ribbing	Graine: sinuosités	Samen: Rippung	Semilla: acostillado	
	(*)					
QN	absent or very weak	absentes ou très faibles	fehlend oder sehr gering	ausente o muy débil	Cabri, Cascari	1
	weak	faibles	gering	débil		3
	medium	moyennes	mittel	medio	Flamenco, Jazz, Twist	5
	strong	fortes	stark	fuerte	Sombrero	7
	very strong	très fortes	sehr stark	muy fuerte	Castor	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
18. MG (*)	Time of flowering (80% of plants with at least one flower)	Époque de la floraison (80% des plantes avec au moins une fleur)	Zeitpunkt der Blüte (80 % der Pflanzen mit mindestens einer Blüte)	Época de floración (80% de las plantas con al menos una flor)		
QN	very early	très précoce	sehr früh	muy precoz	Salsa	1
	early	précoce	früh	precoz	Cabri, Sirtaki	3
	medium	moyenne	mittel	intermedia	Cascari, Sombrero	5
	late	tardive	spät	tardía	Casoar	7
	very late	très tardive	sehr spät	muy tardía	Castor	9
19. VG (*)	Time of dry seed maturity	Époque maturité du grain sec	Zeitpunkt der Trockenreife	Época de madurez del grano seco		
QN	very early	très précoce	sehr früh	muy precoz	Castor	1
	early	précoce	früh	precoz	Cabri, Casoar, Sombrero	3
	medium	moyenne	mittel	intermedia	Flamenco, Sirtaki	5
	late	tardive	spät	tardía	Lambada, Salsa, Twist	7

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) Foliage: observations on the foliage which should be made at the time of flowering.
- (b) Pod: all observations on the pod should be made at the green stage of seeds fully developed in size.

8.2 *Explanations for individual characteristics*

Ad. 12: Pod: number of seeds

predominantly one: percentage of pods with at least 2 seeds \leq 10%
one and two: 10 % < percentage of pods with at least 2 seeds \leq 60%
predominantly two: 60 % < percentage of pods have at least 2 seeds

Ad. 15: Seed: weight

The seed weight should be measured on two samples of 100 seeds.

Ad. 16: Seed: shape



1
round



2
round to angular



3
angular

9. Literature

ICRISAT, ICARDA and IBPGR, 1985: "Chick-pea descriptors", IBPGR Secretariat, Rome, IT, 15 pp.

Maesen, L.J.G. van der, 1972: "Cicer L., a monograph of the genus with special reference to the chick-pea (*C. arietinum* L.), its ecology and cultivation", Meded. Landbouwhogeschool, Wageningen, NL, 72, pp. 1-136

Saxena, M.C. and Singh, K.B., 1987: "The Chick-pea", C.A.B. International (ICARDA), SY, 409 pp.

Smartt, J., 1990: "Grain Legumes" (especially Chapter 6: "Pulses of the classical world, pp. 176-244), Cambridge University Press, Cambridge, GB

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	<input type="text" value="Cicer arietinum L."/>	
1.2 Common Name	<input type="text" value="Chick-Pea"/>	
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"/>	

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

(b) partially known cross []
(please state known parent variety(ies))

(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

(a) Self-pollination []

(b) Cross-pollination []

(c) 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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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	Plant: height (when pods fully developed)		
(3)			
	short	Castor, Sombrero	3[]
	medium	Cabri, Cascari, Sirtaki, Twist	5[]
	tall	Elvar, Lambada, Salsa	7[]
5.2	Flower: color		
(7)			
	white	Sirtaki, Twist	1[]
	purplish pink	Castor, Sombrero	2[]
5.3	Pod: number of seeds		
(12)			
	predominantly one	Twist	1[]
	one and two	Elvar, Flamenco	2[]
	predominantly two	Cascari, Sombrero	3[]
5.4	Seed: color (1 month after harvest)		
(13)			
	yellow		1[]
	beige	Cabri, Sirtaki	2[]
	yellowish brown		3[]
	brown	Castor	4[]
	reddish brown	E04	5[]
	black	Sombrero	6[]

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note	
5.5 Seed: weight (15)			
low	Pedrosillano	3[]	
medium	Amparo, Amit, Cabri, Cascari	5[]	
high	Bianka, Castellano, Jazz	7[]	
very high	Blanco lechoso, Lambada, Salsa	9[]	
5.6 Seed: shape (16)			
round	Cascari, Elvar	1[]	
round to angular	Flamenco, Sirtaki	2[]	
angular	Castor, Sombrero	3[]	
5.7 Time of flowering (80% of plants with at least one flower) (18)			
very early	Salsa	1[]	
early	Cabri, Sirtaki	3[]	
medium	Cascari, Sombrero	5[]	
late	Casoar	7[]	
very late	Castor	9[]	
5.8 Time of dry seed maturity (19)			
very early	Castor	1[]	
early	Cabri, Casoar, Sombrero	3[]	
medium	Flamenco, Sirtaki	5[]	
late	Lambada, Salsa, Twist	7[]	

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 similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Seed: weight</i>	<i>medium</i>	<i>very high</i>

Comments:

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

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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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 of 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]