



These Test Guidelines have been superseded by a later version.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

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

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Diese Prüfungsrichtlinien wurden durch eine neuere Fassung ersetzt. Die neueste angenommene Fassung von Prüfungsrichtlinien ist unter [http://www.upov.int/test\\_guidelines/de/list.jsp](http://www.upov.int/test_guidelines/de/list.jsp) zu finden.

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



TG/259/1

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**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**  
GENEVA

<p><b>AGARICUS MUSHROOM</b></p> <p>UPOV Code: AGARI</p> <p><i>Agaricus L.</i></p>
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**GUIDELINES**  
**FOR THE CONDUCT OF TESTS**  
**FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

Alternative Names: \*

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Agaricus L.</i>	Agaricus Mushroom, Button Mushroom	Agaric, Champignon de Paris	Champignon	Champiñón

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

**ASSOCIATED DOCUMENTS**

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

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

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES.....	3
2. MATERIAL REQUIRED .....	3
3. METHOD OF EXAMINATION.....	3
3.1 Number of Growing Cycles .....	3
3.2 Testing Place .....	3
3.3 Conditions for Conducting the Examination.....	3
3.4 Test Design .....	4
3.5 Number of Fruit Bodies / Parts of Fruit Bodies to be Examined.....	4
3.6 Additional Tests .....	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY .....	4
4.1 Distinctness .....	4
4.2 Uniformity.....	5
4.3 Stability .....	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS .....	6
6.1 Categories of Characteristics.....	6
6.2 States of Expression and Corresponding Notes.....	6
6.3 Types of Expression.....	6
6.4 Example Varieties .....	6
6.5 Legend.....	6
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES.....	7
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS .....	12
8.1 Explanations covering several characteristics .....	12
8.2 Explanations for individual characteristics .....	14
8.3 Growth stages.....	16
9. LITERATURE .....	17
10. TECHNICAL QUESTIONNAIRE .....	18

## 1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of the genus *Agaricus* L.

## 2. Material Required

2.1 The competent authorities decide on the quantity and quality of the 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 spawn or as a pure culture on a suitable medium:

(a) Spawn should be of a quality which ensures that all relevant characteristics of the variety will be expressed. In particular, mycelium on grain should be visible to the naked eye, the grain should not be colonized to such an extent that kernels stick together. The spawn should not be older than 3 months and should have been stored at 2-4 °C.

(b) Pure cultures must be on slant agar tubes with an appropriate medium such as PDA (potato dextrose agar) or Malt extract agar. Tubes should be covered by cotton plugs or plastic caps allowing sterile air diffusion. Cultures should be fresh, i.e. not stored for longer than 2 weeks at low temperature.

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

1 liter of spawn or 2 slant tubes containing a pure culture.

2.4 The 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. The growing cycle is considered to be from spawning until the end of the first flush.

### 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. In particular, the relative humidity should be between 85-95%.

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 fruit bodies or parts of fruit bodies
- MS: measurement of a number of individual fruit bodies or parts of fruit bodies
- VG: visual assessment by a single observation of a group of fruit bodies or parts of fruit bodies
- VS: visual assessment by observation of individual fruit bodies or parts of fruit bodies.

### 3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 120 fruit bodies collected over the first flush, which should be divided between 6 replicates.

3.4.2 The design of the tests should be such that fruit bodies or parts of fruit bodies 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 Fruit Bodies / Parts of Fruit Bodies to be Examined*

Unless otherwise indicated, all observations should be made on 120 fruit bodies or parts taken from each of 120 fruit bodies. The fruit bodies should be distributed over the spawn sample.

### 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 120 fruit bodies, 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 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) Stipe: shape in longitudinal section (characteristic 4)
- (b) Cap: shape in longitudinal section (characteristic 9)
- (c) Cap: color (characteristic 12)
- (d) Basidium: average number of spores (characteristic 15)
- (e) Open cap: shape of central part of upper side (characteristic 19)
- (f) Time of first day of harvest (characteristic 20)

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, MS, VG, VS: See Chapter 3.3.2

(a)–(d) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2.

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>1.</b>	<b>VG/ MS</b>	<b>Stipe: length</b>	<b>Stipe : longueur</b>	<b>Stiel: Länge</b>	<b>Pie: longitud</b>	
(+)						
<b>QN</b>	(a) short	court	kurz	corto	Horwitu, Le Lion C9	3
	(d) medium	moyen	mittel	mediano	Broncoh, Sylvan A15, Sylvan 737	5
	long	long	lang	largo	Somycel 53, Sylvan 512	7
<b>2.</b>	<b>VG/ MS</b>	<b>Stipe: diameter</b>	<b>Stipe : diamètre</b>	<b>Stiel: Durchmesser</b>	<b>Pie: diámetro</b>	
(+)						
<b>QN</b>	(a) narrow	étroit	schmal	estrecho	Somycel 91	3
	(d) medium	moyen	mittel	mediano	Broncoh, Sylvan 512	5
	broad	large	breit	amplio	Horronda, Horwitu, Le Lion C9, Sylvan A15, Sylvan 737	7
<b>3.</b>	<b>VG/ MS</b>	<b>Stipe: ratio length/diameter</b>	<b>Stipe : rapport longueur/diamètre</b>	<b>Stiel: Verhältnis Länge/Durchmesser</b>	<b>Pie: relación longitud/diámetro</b>	
<b>QN</b>	(a) moderately compressed	modérément compressé	mäßig zusammengedrückt	moderadamente comprimida		3
	medium	moyen	mittel	media	Le Lion C9, Sylvan A15, Sylvan 737	5
	moderately elongated	modérément allongé	mäßig länglich	moderadamente alargada	Broncoh	7
<b>4.</b>	<b>VG</b>	<b>Stipe: shape in longitudinal section</b>	<b>Stipe : forme en section longitudinale</b>	<b>Stiel: Form im Längsschnitt</b>	<b>Pie: forma en sección longitudinal</b>	
(*)						
(+)						
<b>PQ</b>	(a) bulbous	bulbeux	knollig	bulbosa		1
	rectangular	rectangulaire	rechteckig	rectangular	Horronda, Horvensis, Sylvan A15, Sylvan 737	2
	trapezoidal	trapézoidale	trapezförmig	trapezoidal	Horwitu	3



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>5.</b>	<b>VG</b>	<b>Stipe: distance from base to veil remnant ring</b>	<b>Stipe : distance depuis la base jusqu'à l'anneau formé par le reste de voile</b>	<b>Stiel: Abstand von der Basis zur Manschette</b>	<b>Pie: distancia de la base al anillo con resto de velo</b>		
(+)							
<b>QN</b>	(c)	short	courte	kurz	corta	Le Lion C9	3
	(d)	medium	moyenne	mittel	media	Broncoh, Horbita	5
		long	longue	lang	larga	Horvensis	7
<b>6.</b>	<b>VG/ MS</b>	<b>Cap: height</b>	<b>Chapeau : hauteur</b>	<b>Hut: Höhe</b>	<b>Sombrero: altura</b>		
(+)							
<b>QN</b>	(a)	short	courte	niedrig	bajo		3
	(d)	medium	moyenne	mittel	mediano	Broncoh, Sylvan A15, Sylvan 737	5
		tall	haute	hoch	alto	Sylvan 512, Sylvan 608	7
<b>7.</b>	<b>VG/ MS</b>	<b>Cap: diameter</b>	<b>Chapeau : diamètre</b>	<b>Hut: Durchmesser</b>	<b>Sombrero: diámetro</b>		
(+)							
<b>QN</b>	(a)	small	petit	klein	pequeño	Commissaris Cremers	3
	(d)	medium	moyen	mittel	mediano	Broncoh, Sylvan 512	5
		large	grand	groß	grande	Horronda, Sylvan A15, Sylvan 737	7
<b>8.</b>	<b>VG/ MS</b>	<b>Cap: ratio height/diameter</b>	<b>Chapeau : rapport hauteur/diamètre</b>	<b>Hut: Verhältnis Höhe/Durchmesser</b>	<b>Sombrero: relación altura/diámetro</b>		
<b>QN</b>	(a)	moderately compressed	modérément compressé	mäßig zusammengedrückt	moderadamente comprimida		3
		medium	moyen	mittel	mediana	Broncoh, Sylvan 737	5
		moderately elongated	modérément allongé	mäßig länglich	moderadamente alargada	Sylvan 512	7
<b>9.</b>	<b>VG</b>	<b>Cap: shape in longitudinal section</b>	<b>Chapeau : forme en section longitudinale</b>	<b>Hut: Form im Längsschnitt</b>	<b>Sombrero: forma en sección longitudinal</b>		
(*)							
(+)							
<b>PQ</b>	(a)	obovate	obovale	eiförmig	oboval		1
		circular	circulaire	kreisförmig	circular	Sylvan 512	2
		oblate	aplatie	breitrund	achatada	Broncoh, Sylvan 737	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>10.</b>	<b>VG/ MS</b>	<b>Cap: thickness in longitudinal section</b>	<b>Chapeau : épaisseur en section longitudinale</b>	<b>Hut: Dicke im Längsschnitt</b>	<b>Sombrero: espesor en sección longitudinal</b>	
(+)						
<b>QN</b>	(a)	thin	mince	dünn	delgado	3
	(d)	medium	moyen	mittel	medio	Broncoh, Horronda
		thick	épais	dick	grueso	Commissaris Cremers, Sylvan A15, Sylvan 737
<b>11.</b>	<b>VG</b>	<b>Cap: scaling</b>	<b>Chapeau : écailles</b>	<b>Hut: Beschuppung</b>	<b>Sombrero: escamado</b>	
(+)						
<b>QN</b>	(a)	absent or very weak	absentes ou très peu nombreuses	fehlend oder sehr gering	ausente o muy débil	Somycel 91, Royal 70, Royal 75
		weak	peu nombreuses	gering	débil	Horronda, Le LionX13, Royal 24A, Sylvan 512
		medium	moyennement nombreuses	mittel	medio	Horwitu
		strong	nombreuses	stark	fuerte	7
		very strong	très nombreuses	sehr stark	muy fuerte	9
<b>12.</b>	<b>VG</b>	<b>Cap: color</b>	<b>Chapeau : couleur</b>	<b>Hut: Farbe</b>	<b>Sombrero: color</b>	
(*)						
<b>PQ</b>	(a)	white	blanc	weiß	blanco	Royal 75, Somycel 91, Sylvan A15, Sylvan 737, Sylvan 608
		yellowish white	blanc jaunâtre	gelblichweiß	blanco amarillento	Horvensis
		greyish white	blanc grisâtre	gräulichweiß	blanco grisáceo	Sylvan 512
		brown	brun	braun	marrón	B 81, Broncoh, Le Lion C9, Sylvan 856
<b>13.</b>	<b>VG</b>	<b>Cap: discoloration of surface after rubbing</b>	<b>Chapeau : changement de couleur de la surface après frottement</b>	<b>Hut: Verfärbung der Oberfläche nach Reiben</b>	<b>Sombrero : decoloración de la superficie tras frotarla</b>	
(+)						
<b>QN</b>	(a)	weak	faible	gering	débil	Broncoh
		medium	moyen	mittel	media	Horbita, Sylvan A15, Sylvan 737, Sylvan 512
		strong	fort	stark	fuerte	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>14.</b>	<b>VG</b>	<b>Gills: color at time of breaking of veil</b>	<b>Lamelles : couleur au moment de la rupture du voile</b>	<b>Lamellen: Farbe zum Zeitpunkt des Zerreißens der Manschette</b>	<b>Laminillas: color en el momento de ruptura del velo</b>	
<b>PQ</b>	<b>(b)</b>	orange	orange	orange	anaranjado	Horvensis 1
		light brown	marron clair	hellbraun	marrón claro	Horronda, Horwitu 2
		dark brown	marron foncé	dunkelbraun	marrón oscuro	Broncoh 3
<b>15.</b>	<b>MS</b>	<b>Basidium: average number of spores</b>	<b>Baside : nombre moyen de spores</b>	<b>Basidie: durchschnittliche Anzahl Sporen</b>	<b>Basidio: número medio de esporas</b>	
<b>QN</b>	<b>(b)</b>	two	deux	zwei	dos	Broncoh, Horronda, Horwitu 2
		three	trois	drei	tres	3
		four	quatre	vier	cuatro	Horbita, Horvensis 4
<b>16.</b>	<b>VG/ MS</b>	<b>Open cap: diameter</b>	<b>Chapeau ouvert : diamètre</b>	<b>Offener Hut: Durchmesser</b>	<b>Sombrero abierto: diámetro</b>	
<b>QN</b>	<b>(c)</b>	small	petit	klein	pequeño	Le Lion X13, Royal 75 3
	<b>(d)</b>	medium	moyen	mittel	mediano	Royal 20A, Sylvan 512 5
		large	grand	groß	grande	Broncoh, Sylvan A15, Sylvan 737 7
<b>17.</b>	<b>VG/ MS</b>	<b>Open cap: thickness</b>	<b>Chapeau ouvert : épaisseur</b>	<b>Offener Hut: Dicke</b>	<b>Sombrero abierto: espesor</b>	
<b>QN</b>	<b>(c)</b>	thin	mince	dünn	delgado	3
	<b>(d)</b>	medium	moyen	mittel	mediano	Broncoh, Horwitu, Le Lion X13 5
		thick	épais	dick	grueso	Somycel 205, Sylvan A15, Sylvan 737 7
<b>18.</b>	<b>VG</b>	<b>Open cap: fraying of margin</b>	<b>Chapeau ouvert : effilochage du bord</b>	<b>Offener Hut: Ausfransen des Randes</b>	<b>Sombrero abierto: deshilachado del borde</b>	
<b>QN</b>	<b>(c)</b>	absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Le Lion C9, Royal 26A 1
		moderate	modéré	mäßig	moderado	Broncoh, Horwitu, Somycel 205 2
		strong	prononcé	stark	fuerte	Horronda 3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>19. VG</b> (*) (+)	<b>Open cap: shape of central part of upper side</b>	<b>Chapeau ouvert : forme de la partie centrale de la face supérieure</b>	<b>Offener Hut: Form des mittleren Teils der Oberseite</b>	<b>Sombrero abierto: forma del centro de la parte superior</b>		
<b>QN</b>	(c) rounded	arrondie	abgerundet	redondeada	Sylvan 512	1
	plane	plane	eben	plana	Sylvan A15	2
	depressed	déprimée	eingesenkt	deprimida	Broncoh	3
<b>20. MG</b> (*) (+)	<b>Time of first day of harvest</b>	<b>Époque du premier jour de récolte</b>	<b>Zeitpunkt des ersten Erntetages</b>	<b>Época de primer día de cosecha</b>		
<b>QN</b>	early	précoce	früh	temprana	Euromycel 30	3
	medium	intermédiaire	mittel	media	Le Lion C9	5
	late	tardive	spät	tardía		7
<b>21. MG</b> (+)	<b>Time of peak of first flush</b>	<b>Époque du pic de la première période de floraison</b>	<b>Zeitpunkt des Höhepunktes des ersten Austriebs</b>	<b>Momento pico de los primeros brotes</b>		
<b>QN</b>	early	précoce	früh	temprano	Euromycel 30	3
	medium	intermédiaire	mittel	medio	Le Lion C9	5
	late	tardive	spät	tardío		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) Stipe, cap: Unless otherwise indicated, all characteristics of the stipe and the cap should be made at growth stage 2, when the fruit body appears as a button mushroom with the veil closed (see Chapter 8.3).

(b) Gills: Unless otherwise indicated, all characteristics of the gills should be made at growth stage 3, when the fruit body appears as a button mushroom with the veil breaking (see Chapter 8.3).

(c) Open cap: Unless otherwise indicated, all characteristics of the open cap should be made at growth stage 5, when the cap of the fruit body is fully open and flat (see Chapter 8.3).

(d) General illustration:

Characteristic 1: Stipe: length

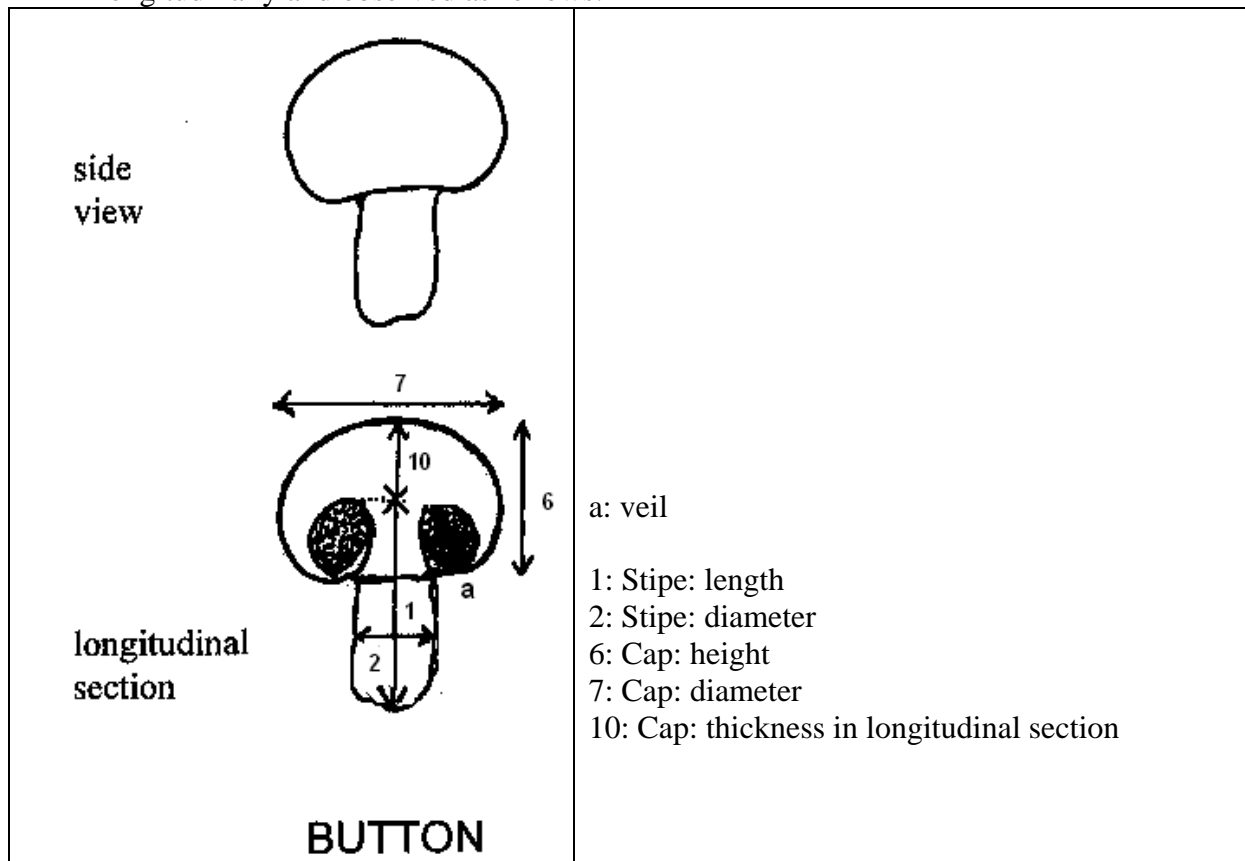
Characteristic 2: Stipe: diameter

Characteristic 6: Cap: height

Characteristic 7: Cap: diameter

Characteristic 10: Cap: thickness in longitudinal section

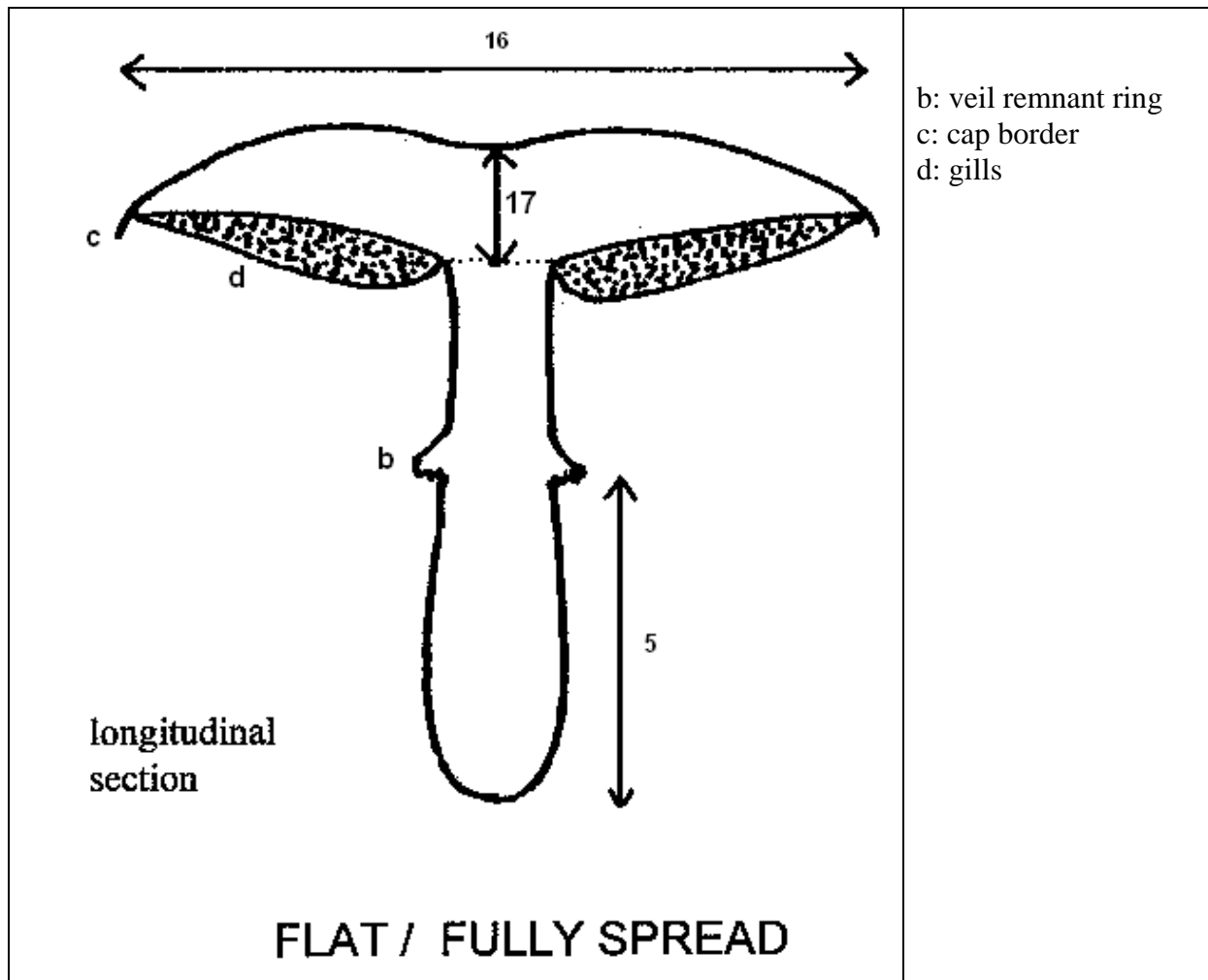
The fruit bodies observed at growth stage 2 for the above characteristics should be cut longitudinally and observed as follows:



Characteristic 5: Stipe: distance from base to veil remnant ring

Characteristic 16: Open cap: diameter

Characteristic 17: Open cap: thickness



5: Stipe: distance from base to veil remnant ring

16: Open cap: diameter

17: Open cap: thickness

8.2 *Explanations for individual characteristics*

Ad. 4: Stipe: shape in longitudinal section



1  
bulbous

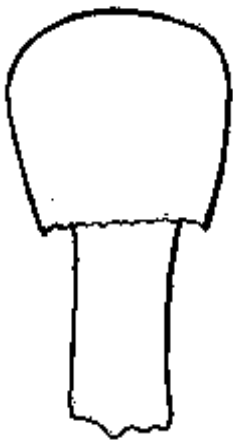


2  
rectangular

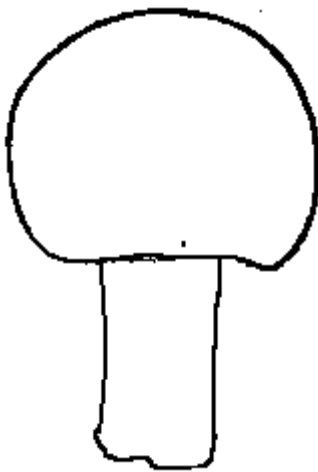


3  
trapezoidal

Ad. 9: Cap: shape in longitudinal section



1  
obovate

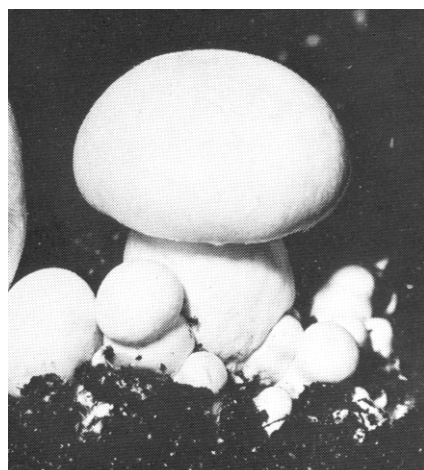


2  
circular



3  
oblate

Ad. 11: Cap: scaling



1  
absent or very weak

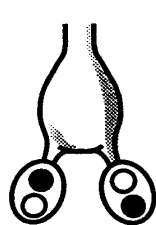


9  
very strong

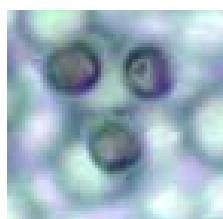
Ad. 13: Discoloration of surface after rubbing

The discoloration of the surface should be observed before the breaking of the veil, 10 minutes after rubbing the mushrooms

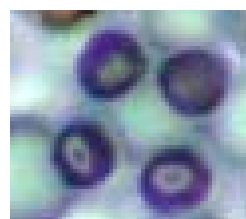
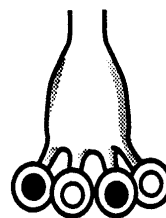
Ad. 15: Basidium: average number of spores



two



three

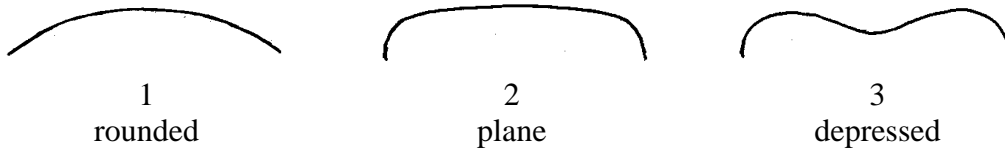


f

The average number of spores per basidium (ASN) is calculated as follows:  $ASN = (300 + TSC - BSC) / 100$ , where BSC is the percentage of bisporic basidia and TSC is the percentage of tetrasporic basidia. BSC and TSC are based on counts of basidia on lamellar surface of fresh material on dry mount under light microscope (x400). Varieties with an average number of two spores have an ASN value of less than 2.5. Varieties with an average number of three spores have an ASN value between 2.5 and 3.5. Varieties with an average number of four spores have an ASN value greater than 3.5.



Ad. 19: Open cap: shape of central part of upper side



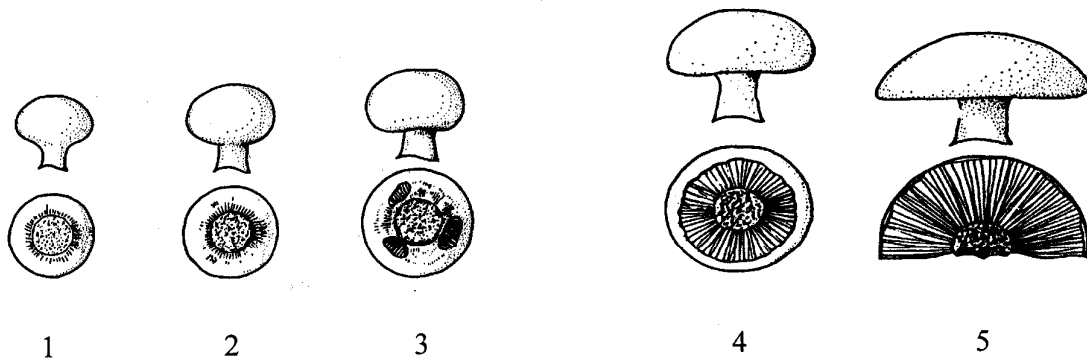
Ad. 20: Time of first day of harvest

The time of the first day of harvest is when fruit bodies have reached growth stage 2.

Ad. 21: Time of peak of first flush

The dates of harvest of fruit bodies at growth stage 2 are recorded. The time of the peak of the first flush is the time at which the largest number of fruit bodies was harvested.

8.3 *Growth stages*



Explanation:

1, 2 and 3 - button stage  
1 and 2 - veil closed  
3 - veil breaking

4 - opening / gills visible  
5 - fully open / flat stage

9. Literature

Flegg, P.B., Spencer, D.M. and Wood, D.A., 1985: The Biology and Technology of the Cultivated Mushroom. J. Wiley & Son, 347 pp.

Fritsche, G., 1964: Versuche zur Frage der Merkmalsübertragung beim Kulturchampignon *Agaricus (Psalliota) bisporus* (Lge.) Sing. Der Züchter 34-2: 76-93.

Fritsche, G., 1979: Breeding work with *Agaricus bitorquis*, Methods and Results of the Experimental Station in Horst. The Netherlands, Australian Mushroom Growers' Annual 2: 22-25.

Neut, A. van der, 1991: The development of a set of characteristics for DUS Tests of cultivated mushroom varieties. In: Genetics and Breeding of *Agaricus*, Pudoc Wageningen, pp. 153-160

Singer, R., 1986: The *Agaricales* in Modern Taxonomy. Koeltz (Ger.), 981 pp.

Vooren, J.G. van de, Polder, G. & Heijden, G.W.A.M. van der, 1991: Application of image analysis for variety testing of mushroom. *Euphytica* 57: 245-250

Vooren, J.G. van de, Polder, G. & Heijden, G.W.A.M. van der, 1992: Identification of Mushroom Cultivars Using Image Analysis. *Transactions of the ASAE* 35-1: 347-350.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
<b>TECHNICAL QUESTIONNAIRE</b> 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="Agaricus L."/>	
1.2 Common Name	<input type="text" value="Agaricus Mushroom"/>	
	Species (please complete)	
	<input type="text"/>	
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

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# 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
<b>5.1</b>	<b>Stipe: shape in longitudinal section</b>		
<b>(4)</b>			
	bulbous		1 [ ]
	rectangular	Horronda, Horvensis, Sylvan A15, Sylvan 737	2 [ ]
	trapezoidal	Horwitu	3 [ ]
<b>5.2</b>	<b>Cap: shape in longitudinal section</b>		
<b>(9)</b>			
	obovate		1 [ ]
	circular	Sylvan 512	2 [ ]
	oblate	Broncoh, Sylvan 737	3 [ ]
<b>5.3</b>	<b>Cap: color</b>		
<b>(12)</b>			
	white	Royal 75, Somycel 91, Sylvan A15, Sylvan 737, Sylvan 608	1 [ ]
	yellowish white	Horvensis	2 [ ]
	greyish white	Sylvan 512	3 [ ]
	brown	B 81, Broncoh, Le Lion C9, Sylvan 856	4 [ ]
<b>5.4</b>	<b>Basidium: average number of spores</b>		
<b>(15)</b>			
	two	Broncoh, Horronda, Horwitu	2 [ ]
	three		3 [ ]
	four	Horbita, Horvensis	4 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Characteristics	Example Varieties	Note
<b>5.5 (19)</b>	<b>Open cap: shape of central part of upper side</b>		
	rounded	Sylvan 512	1[ ]
	plane	Sylvan A15	2[ ]
	depressed	Broncoh	3[ ]
<b>5.6 (20)</b>	<b>Time of first day of harvest</b>		
	early	Euromycel 30	3[ ]
	medium	Le Lion C9	5[ ]
	late		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 <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Cap: color</i>	<i>greyish white</i>	<i>brown</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 Resistance to pests and diseases

	susceptible	moderately resistant	highly resistant	not tested
a) Resistance to <i>Verticillium fungicola</i> var. <i>fungicola</i>	[ ]	[ ]	[ ]	[ ]

b) Other (please specify)

7.4 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.

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# 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 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 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]