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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

AGARICUS MUSHROOM *

UPOV Code: AGARI

Agaricus L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from the European Community

to be considered by the Enlarged Editorial Committee at its meeting to be held in Geneva, Switzerland, on January 7, 2010

Alternative Names:*

Latin	*English*	*French*	*German*	*Spanish*
Agaricus L.	Agaricus Mushroom, Button Mushroom	Champignon, 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), for the latest information.]

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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. (see also: Additional information: Life cycle of *Agaricus* in Chapter 8.3)

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 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, which should preferably 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 20 fruit bodies or parts taken from each of 20 fruit bodies per replicate. The 20 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. The 20 fruit bodies should be distributed over the spawn sample.

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) Basidium: average number of spores (characteristic 1)
(b) Stipe: shape in longitudinal section (characteristic 5)
(c) Cap: shape in longitudinal section (characteristic 10)
(d) Cap: color (characteristic 13)
(e) Open cap: shape of central part of upper side (characteristic 18)
(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)–(c) 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
1. (*) (+)	**MS**	**Basidium: average number of spores**	**Baside : nombre moyen de spores**	**Basidie: durchschnittliche Anzahl Sporen**	**Basidio: promedio de esporas**		
QN	**(b)**	predominantly two	deux le plus fréquemment	vorwiegend 2	predominante dos	Broncoh, Horronda, Horwitu	2
		between 2 and 4	entre 2 et 4	zwischen 2 und 4	entre 2 y 4		3
		predominantly four	quatre le plus fréquemment	vorwiegend 4	predominantemente cuatro	Horbita, Horvensis	4
2. (+)	**VG/ MS**	**Stipe: length**	**Stipe : longueur**	**Stiel: Länge**	**Pie: longitud**		
QN	**(a)**	short	courte	kurz	corto	Horwitu, Le Lion C9	3
		medium	moyenne	mittel	mediano	Broncoh, Sylvan A15, Sylvan 737	5
		long	longue	lang	largo	Somycel 53, Sylvan 512	7
3. (+)	**VG/ MS**	**Stipe: diameter**	**Stipe : diamètre**	**Stiel: Durchmesser**	**Pie: diámetro**		
QN	**(a)**	narrow	étroit	schmal	estrecho	Somycel 91	3
		medium	moyen	mittel	mediano	Broncoh, Sylvan 512	5
		broad	large	breit	amplio	Horronda, Horwitu, Le Lion C9, Sylvan A15, Sylvan 737	7
4.	**VG/ MS**	**Stipe: ratio length/diameter**	**Stipe : rapport longueur/diamètre**	**Stiel: Verhältnis Länge/Durch-messer**	**Pie: relación longitud/diámetro**		
QN	**(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

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. (*) (+)	**VG**	**Stipe: shape in longitudinal section**	**Stipe : forme en section longitudinale**	**Stiel: Form im Längsschnitt**	**Pie: forma en sección longitudinal**		
QN	**(a)**	bulbous	bulbeuse	knollig	bulbosa		1
		rectangular	rectangulaire	rechteckig	rectangular	Horronda, Horvensis, Sylvan A15, Sylvan 737	2
		trapezoidal	trapézoïdale	trapezförmig	trapezoidal	Horwitu	3
6. (+)	**VG**	**Stipe: distance from base to veil remnant ring**	**Stipe : distance depuis la base jusqu'à l'anneau formé par le reste de voile**	**Stiel: Abstand von der Basis zum Ring des Restschleiers**	**Pie: distancia de la base al anillo con resto de velo**		
QN	**(a)**	short	courte	kurz	corta	Le Lion C9	3
		medium	moyenne	mittel	media	Broncoh, Horbita	5
		long	longue	lang	larga	Horvensis	7
7. (+)	**VG/ MS**	**Cap: height**	**Chapeau : hauteur**	**Hut: Höhe**	**Sombrero: altura**		
QN	**(a)**	short	courte	niedrig	corto		3
		medium	moyenne	mittel	mediano	Broncoh, Sylvan A15, Sylvan 737	5
		tall	haute	hoch	alto	Sylvan 512, Sylvan 608	7
8. (+)	**VG/ MS**	**Cap: diameter**	**Chapeau : diamètre**	**Hut: Durchmesser**	**Sombrero: diámetro**		
QN	**(a)**	small	petit	klein	pequeño	Commissaris Cremers	3
		medium	moyen	mittel	mediano	Broncoh, Sylvan 512	5
		large	grand	groß	grande	Horronda, Sylvan A15, Sylvan 737	7
9.	**VG/ MS**	**Cap: ratio height/diameter**	**Chapeau : rapport hauteur/diamètre**	**Hut: Verhältnis Höhe/Durchmesser**	**Sombrero: relación altura/diámetro**		
QN	**(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

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10. (*) (+)	**VG**	**Cap: shape in longitudinal section**	**Chapeau : forme en section longitudinale**	**Hut: Form im Längsschnitt**	**Sombrero: forma en sección longitudinal**		
PQ	**(a)**	obovate	obovale	eiförmig	oboval		1
		circular	circulaire	kreisförmig	circular	Sylvan 512	2
		oblate	aplatie	breitrund	achatada	Broncoh, Sylvan 737	3
11. (+)	**VG/ MS**	**Cap: thickness in longitudinal section**	**Chapeau : épaisseur en section longitudinale**	**Hut: Dicke im Längsschnitt**	**Sombrero: espesor en sección longitudinal**		
QN	**(a)**	thin	fine	dünn	delgado		3
		medium	moyenne	mittel	medio	Broncoh, Horronda	5
		thick	épaisse	dick	grueso	Commissaris Cremers, Sylvan A15, Sylvan 737	7
12. (+)	**VG**	**Cap: scaling**	**Chapeau : écailles**	**Hut: Beschuppung**	**Sombrero: escamado**		
QN	**(a)**	absent or very weak	absentes ou très peu nombreuses	fehlend oder sehr gering	ausente o muy débil	Somycel 91, Royal 70, Royal 75	1
		weak	peu nombreuses	gering	débil	Horronda, Le LionX13, Royal 24A, Sylvan 512	3
		medium	moyennement nombreuses	mittel	medio	Horwitu	5
		strong	nombreuses	stark	fuerte		7
		very strong	très nombreuses	sehr stark	muy fuerte		9
13. (*)	**VG**	**Cap: color**	**Chapeau : couleur**	**Hut: Farbe**	**Sombrero: color**		
PQ	**(a)**	white	blanc	weiß	blanco	Royal 75, Somycel 91, Sylvan A15, Sylvan 737, Sylvan 608	1
		yellowish white	blanc jaunâtre	gelblichweiß	blanco amarillento	Horvensis	2
		greyish white	blanc grisâtre	gräulichweiß	blanco grisáceo	Sylvan 512	3
		brown	brun	braun	marrón	B, 81, Broncoh, Le Lion C9, Sylvan 856	4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14. **(+)**	**VG**	**Gills: color at time of breaking of the veil**	**Lamelles : couleur au moment de la rupture du voile**	**Lamellen: Farbe zum Zeitpunkt des Zerreißens des Schleiers**	**Laminillas: color en el momento de ruptura del velo**		
PQ	**(a)**	orange	orange	orange	naranja	Horvensis	1
		light brown	marron clair	hellbraun	marrón claro	Horronda, Horwitu	2
		dark brown	marron foncé	dunkelbraun	marrón oscuro	Broncoh	3
15. **(+)**	**MS**	**Open cap: diameter**	**Chapeau ouvert : diamètre**	**Offener Hut: Durchmesser**	**Sombrero abierto: diámetro**		
QN	**(b)**	small	petit	klein	pequeño	Le Lion X13, Royal 75	3
		medium	moyen	mittel	mediano	Royal 20A, Sylvan 512	5
		large	grand	groß	grande	Broncoh, Sylvan A15, Sylvan 737	7
16. **(+)**	**MS**	**Open cap: thickness**	**Chapeau ouvert : épaisseur**	**Offener Hut: Dicke**	**Sombrero abierto: espesor**		
QN	**(b)**	thin	fine	dünn	delgado		3
		medium	moyenne	mittel	mediano	Broncoh, Horwitu, Le Lion X13	5
		thick	épaissse	dick	grueso	Somycel 205, Sylvan A15, Sylvan 737	7
17. **(*)** **(+)**	**VG**	**Open cap: fraying of margin**	**Chapeau ouvert : effilochage du bord**	**Offener Hut: Ausfransen des Randes**	**Sombrero abierto: deshilachado del borde**		
QN	**(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
18. **(*)** **(+)**	**VG**	**Open cap: shape of central part of upper side**	**Chapeau ouvert : forme de la partie centrale de la face supérieure**	**Offener Hut: Form des mittleren Teils der Oberseite**	**Sombrero abierto: forma del centro de la parte superior**		
QN	**(b)**	rounded	arrondie	abgerundet	redondeada	Sylvan 512	1
		flat	plate	flach	plana	Sylvan A15	2
		depressed	déprimée	eingesenkt	deprimida	Broncoh	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
19. (+)	**VG**	**Discoloration of surface after rubbing**	**Changement de couleur de la surface après frottement**	**Verfärbung der Oberfläche nach dem Reiben**	**Descoloramiento de la superficie tras frotarla**		
QN	**(a)**	weak	faible	gering	débil	Broncoh	3
		medium	moyen	mittel	media	Horbita, Sylvan A15, Sylvan 737, Sylvan 512	5
		strong	marqué	stark	fuerte		7
20. (*)	**MG**	**Time of first day of harvest**	**Époque du premier jour de récolte**	**Zeitpunkt des ersten Erntetages**	**Hora del primer día de cosecha**		
QN	**(c)**	early	précoce	früh	temprana	Euromycel 30	3
		medium	intermédiaire	mittel	media	Le Lion C9	5
		late	tardive	spät	tardía		7
21.	**MG**	**Time of peak of first harvest**	**Époque du pic de la première récolte**	**Zeitpunkt des Höhepunktes der ersten Ernte**	**Momento álgido de la primera cosecha**		
QN		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

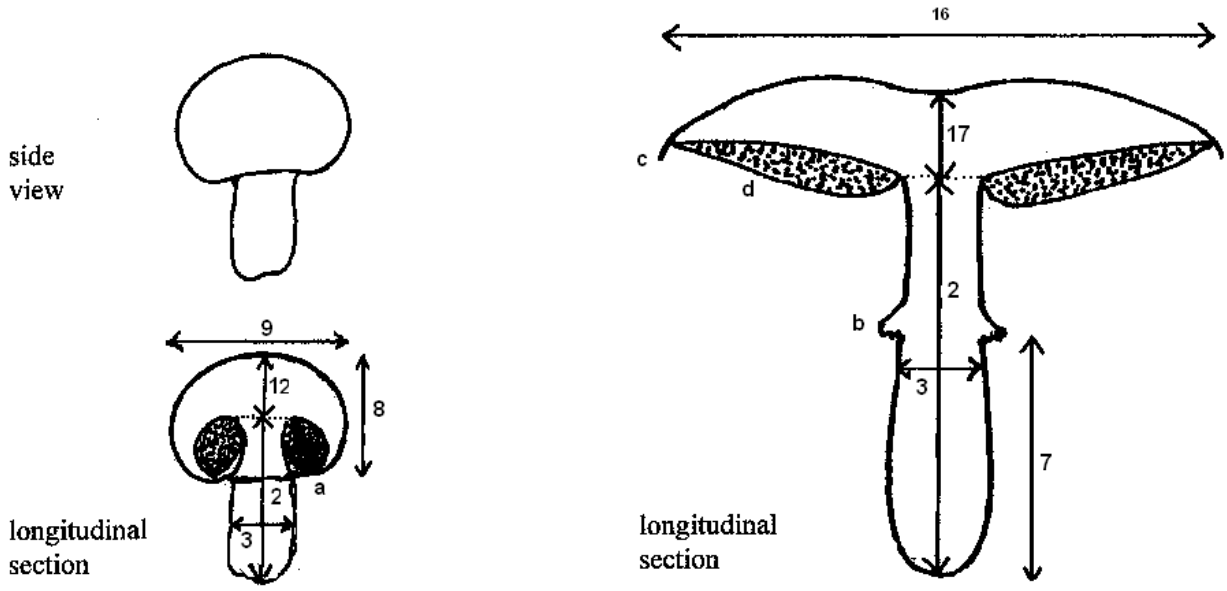
Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

(a) Stipe, cap and gills: Unless otherwise indicated, all characteristics of the fruit bodies, the cap, the stipe and the gills should be recorded at harvest maturity (button stage 1, 2 and 3 (see Ad. 14, 17) hand picked mushrooms; freshly harvested).

(b) Open cap: The characteristics of the open cap should be recorded as soon as the cap is fully spread. Records should preferably be made from first and second flush; the third flush may give some additional information.

(c) Flushing pattern: To be expressed in term of number of days after casing. Varieties harvested less than 19 days after casing can be considered as early, and those more than 22 days after casing can be considered as late.

General illustration



BUTTON FLAT / FULLY SPREAD

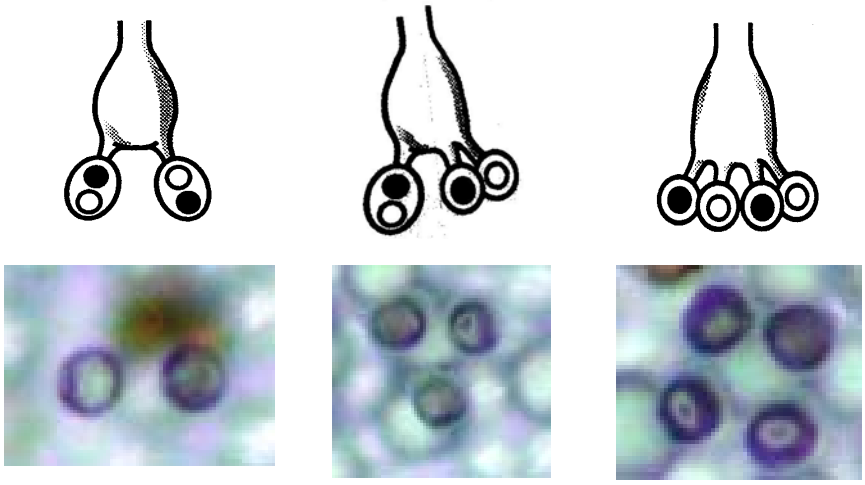
Explanation:

2: Stipe: length
3: Stipe: diameter
7: Stipe: distance from base to veil remnant ring
8: Cap: height
9: Cap: diameter
12: Cap: thickness in longitudinal section
16: Open cap: diameter
18: Open cap: thickness

a: veil
b: veil remnant ring
c: cap border
d: gills

8.2 Explanations for individual characteristics

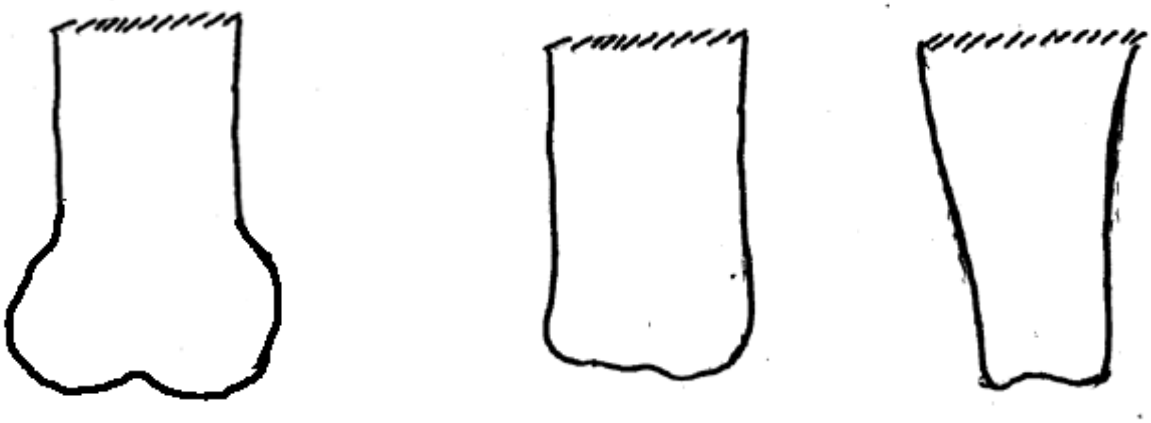
Ad. 1: Basidium: average number of spores



2	3	4
predominantly two	between 2 and 4	predominantly four

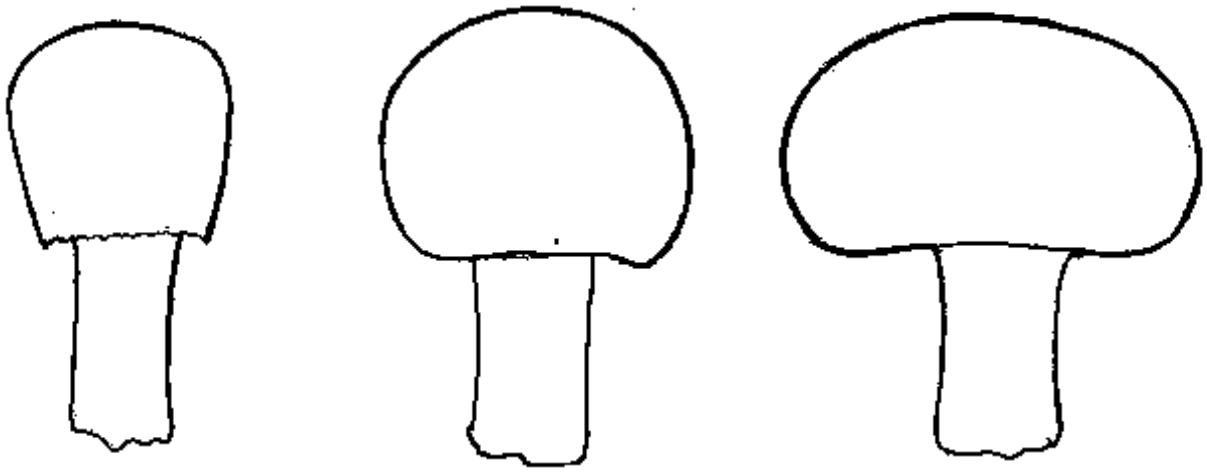
The average number of spores per basidium (or ASN) is calculated as follows: ASN=(300+TSC-BSC)/100,
Where BSC is the percentage of bisporic basidia and TSC is the percentage of tetrasporic basidia. BSC and TSC are based on counts of basidia on lamellar surface of fresh material on dry mount under light microscope (x400).
Preponderantly bisporic strains have an ASN value of predominantly two (<2.5). Preponderantly tetrasporic strains have an ASN value of predominantly four (>3.5). Preponderantly trisporic strains have an ASN intermediate value (2.5 < ASN < 3.5).

Ad. 5: Stipe: shape in longitudinal section



1	2	3
bulbous	rectangular	trapezoidal

Ad. 10: Cap: shape in longitudinal section



1
obovate

2
circular

3
oblate

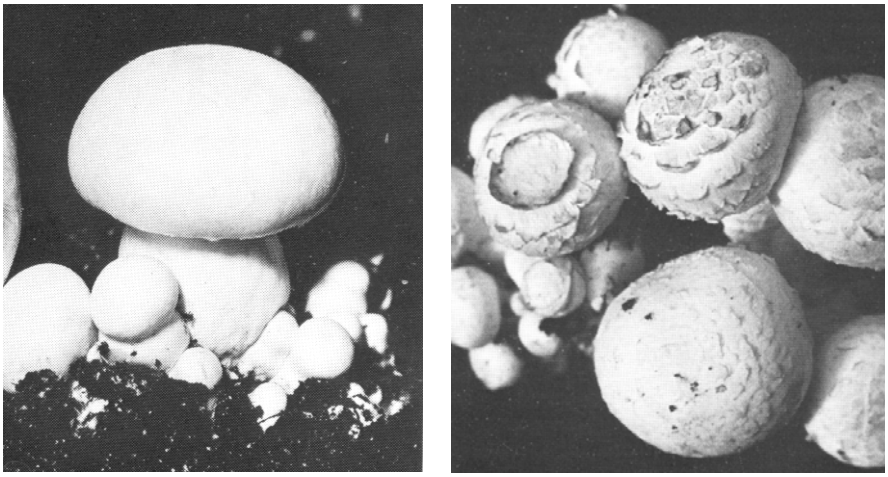
Ad. 12: Cap: scaling

The relative humidity has to be 85-88%. Too low a relative humidity combined with high air speed leads to scale formation on the cap; the formation of scales means that the mycelium has broken and if growing conditions become favorable once more, bacterial contamination can appear.

Scaliness is a trait that can vary according to:

- stage: button stage is smoother than older stages, so the best stage for observation is stage 2 (veil closed);
- environmental conditions: the trait is longer when relative humidity is low or air speed is too high (except if scales are absent – i.e. for smooth hybrids), so conditions to meet for the observation are those of production (RH: 90-95%);
- flushes: the first flush is more scaly than the second and third ones (except if scales are absent – i.e. for smooth hybrids), so the observation should be done at least for the first flush.

It should be noted that the side of the cap is more scaly than the top.



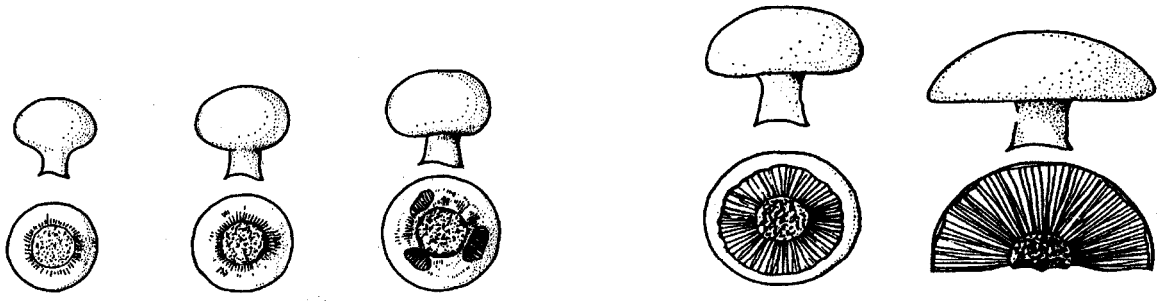
1
absent of very weak

9
very strong

Ad. 14: Gills: color at time of breaking of the veil
Ad. 17: Open cap: fraying of margin

The color of gills should be observed at veil breaking because all spores will become brown after veil breaking.

The fraying of the margin should be observed when the cap opens. One part of the veils remain attached on the cap border, and another part attached to the stipe. The way the veil breaks and remains attached to the cap and/or the stipe is responsible for the appearance of the margin.



1 2 3 4 5

Explanation: 1, 2 and 3 - button stage
1 and 2 - veil closed
3 - veil breaking
4 - opening / gills visible
5 - fully open / flat stage

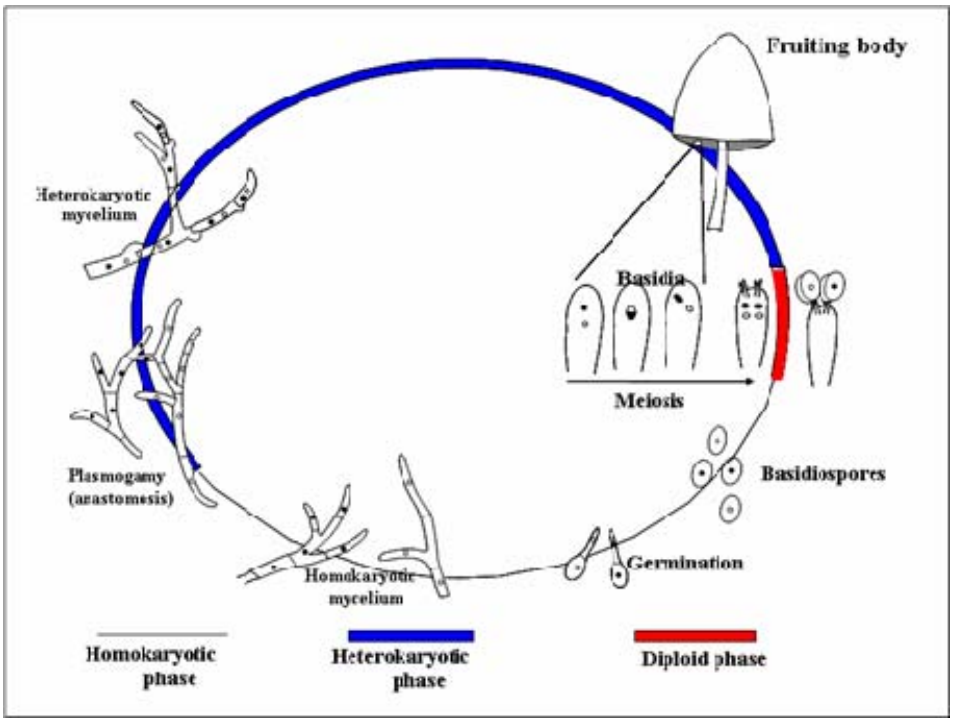
Ad. 18: Open cap: shape of central part of upper side

1 rounded 2 flat 3 depressed

Ad. 19: 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

8.3 Additional information: Life cycle of Agaricus L.



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. and 80 pl.

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)

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

1. Subject of the Technical Questionnaire

1.1 Botanical Name	*Agaricus* L.
1.2 Common Name	Agaricus Mushroom
Species (please complete)	

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)

(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

[#] 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:

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 (1)	**Basidium: average number of spores**		
	predominantly two	Broncoh, Horronda, Horwitu	2[ ]
	between 2 and 4		3[ ]
	predominantly four	Horbita, Horvensis	4[ ]
5.2 (5)	**Stipe: shape in longitudinal section**		
	bulbous		1 [ ]
	rectangular	Horronda, Horvensis, Sylvan A15, Sylvan 737	2[ ]
	trapezoid	Horwitu	3[ ]
5.3 (10)	**Cap: shape in longitudinal section**		
	obovate		1[ ]
	circular	Sylvan 512	2[ ]
	oblate	Broncoh, Sylvan 737	3[ ]
5.4 (13)	**Cap: color**		
	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[ ]

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

	Characteristics	Example Varieties	Note
5.5 (18)	**Open cap: shape of central part of upper side**		
	rounded	Sylvan 512	1[ ]
	flat	Sylvan A15	2[ ]
	depressed	Broncoh	3[ ]

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	*Cap: color*	*greyish white*	*brown*

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 Resistance to pests and diseases

	susceptible	moderately resistant	highly resistant	not tested
a) Resistance to *Verticillium fungicola* var. *fungicola*	[ ]	[ ]	[ ]	[ ]

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.

[#] 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:

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]