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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

AGARICUS MUSHROOM

UPOV Code: AGARI

Agaricus bisporus L.
Agaricus bitorquis L.
Agaricus arvensis 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
Technical Working Party for Vegetables
at its forty-second session to be held in Cracow, Poland, from June 23 to 27, 2008

Alternative Names:[*]

Latin	*English*	*French*	*German*	*Spanish*
Agaricus bisporus L., *Agaricus bitorquis* L., *Agaricus arvensis* L.	Agaricus Mushroom, Mushroom, Button Mushroom	Champignon de couche	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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Agaricus bisporus* L., *Agaricus bitorquis* L., and *Agaricus arvensis* L. (*Agaricaceae*) (especially 'white and/or brown button mushroom')

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the fungal 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.

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

1 litre of spawn or 2 slant tubes containing a pure culture
(HU proposes 2-3 litres of spawn)

2.4 If spawn is delivered it should not be below the standards of commercial spawn for marketing in the country concerned, especially in regard to the quantity of hyphae. 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 6 months and having been stored under proper conditions (i.e. 2-4 °C).

2.5 If pure cultures is delivered, it must be shipped on slant agar tubes with appropriate medium such as PDA (peptose 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.
(HU disagrees with this type of material, since specialized equipment is required at the testing station. Prefers to have spawn only).

2.6 The fungal 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 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

3.4.1 Each test should be designed to result in a total of at least 180 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 30 fruit bodies or parts taken from each of 30 fruit bodies per replicate.

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 180 fruit bodies, 4 off-types are allowed.

[FR breeder comments that the definition of “off-types” does not seem to be appropriate for *Agaricus*. Different mushrooms on the same bed are not different individuals but organ of the same individual; their different phenotypes are therefore due to the effect of micro-environments on their growth (e.g. micro-climate, competition between mushrooms, etc.)]

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 5)
(b) Cap: shape in longitudinal section (characteristic 12)
(c) Cap: color (characteristic 15)
(d) Open Cap: shape of central part of upper side (characteristic 20)
(e) Flushing pattern: earliness of first flush (characteristic 22)

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. (*) (+)	**MG**	**Basidium: number of spores**					
QL	**(b)**	two				Broncoh, Horronda, Horwitu	2
(PQ, QN?)		between 2 and 4	*To check if state 3 really exists (example varieites?) [FR breeder of the opinion that varieties will soon be released]*				3
		four				Horbita, Horvensis	4
2.	**MS**	**Stipe: length**					
(+)							
QN	**(a)**	short				Horwitu, Le Lion C9	3
		medium				Broncoh, Le Lion B86, Somycel 76, Sylvan A15, Sylvan 737	5
		long				Somycel 53, Sylvan 512	7
3.	**MS**	**Stipe: diameter**					
(+)							
QN	**(a)**	small				Somycel 91	3
		medium				Broncoh, Somycel 76, Sylvan 512	5
		large				Horronda, Horwitu, Le Lion C9, Sylvan A15, Sylvan 737	7
4.	**MS**	**Stipe: ratio length/diameter**					
QN	**(a)**	small					3
		medium				Le Lion C9, Sylvan A15, Sylvan 737	5
		large				Broncoh	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. **(*)** **(+)**	**VG**	**Stipe: shape in longitudinal section**					
QL	**(a)**	rectangular				Horronda, Horvensis, Sylvan A15, Sylvan 737	1
		trapezoid	*Qu.: is it possible to have a trapezoidal shape with a swollen base?!*			Horwitu	2
6. **(+)**	**VG**	**Stipe: swollen base in longitudinal section**					
QL	**(a)**	absent	*Qu.: Is it truly absent as well as being a QL Characteristic? Can char. 6 be combined with char.7? Drawing needs to be improved.*			Horronda	1
		present				Horbita	9
7.	**VG**	**Stipe: intensity of swelling of base**					
QN	**(a)**	weak	*Proposal by HU to delete characteristic 7, or at least combine it with characteristic 6*			Broncoh	3
		medium				Horbita	5
		strong					7
8. **(+)**	**VG**	**Stipe: distance from base to veil remnant ring**					
QN	**(a)**	short				Commissaris Cremers, Le Lion C9	3
		medium				Broncoh, Horbita	5
		long				Horvensis	7
9. **(+)**	**MS**	**Cap: height**					
QN	**(a)**	short				*Example variety?*	3
		medium				Broncoh, Sylvan A15, Sylvan 737	5
		tall				Sylvan 512, Sylvan 608	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.	**MS**	**Cap: diameter**					
(+)							
QN	**(a)**	small				Commissaris Cremers	3
		medium				Broncoh, Somycel 76, Sylvan 512	5
		large				Horronda, Sylvan A15, Sylvan 737	7
11.	**MS**	**Cap: ratio height/diameter**					
QN	**(a)**	small				Le Lion C9	3
		medium				Broncoh, Sylvan A15, Sylvan 737	5
		large				Sylvan 512	7
12. **(*)** **(+)**	**VG**	**Cap: shape in longitudinal section**					
PQ	**(a)**	obovate				Horvensis	1
		circular				Commissaris Cremers, Horronda, Sylvan 512	2
		transverse elliptic				Broncoh, Horwitu, Sylvan A15, Sylvan 737	3
13. **(+)**	**MS**	**Cap: thickness in longitudinal section**					
QN	**(a)**	thin				Le Lion B86, Somycel 76	3
		medium				Broncoh, Horronda	5
		thick				Commissaris Cremers, Sylvan A15, Sylvan 737	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14. **(+)**	**VG**	**Cap: amount of scales**	*Are any special growing conditions required for observation?*				
QN	**(a)**	absent or very low				Somycel 91, Royal 70, Royal 75, Sylvan A15, Sylvan 737	1
		low				Horronda, Le LionX13, Royal 24A, Sylvan 512	3
		medium				Horwitu	5
		high				Somycel 76	7
		very high					9
15. **(*)**	**VG**	**Cap: color**					
PQ	**(a)**	white				Royal 75, Somycel 91, Sylvan A15, Sylvan 737, Sylvan 608	1
		yellowish white				Horvensis	2
		grayish white				Somycel 76, Sylvan 512	3
		brown				B, 81, Broncoh, Le Lion C9, Sylvan 856	4
16. **(+)**	**VG**	**Gills: color at time of breaking of the veil**	*clarification required on best time to observe*				
PQ	**(a)**	pink	*Should state 1 be deleted (represented by light brown)?*			*Example varieties?*	1
		orange				Horvensis	2
		light brown				Horronda, Horwitu	3
		dark brown				Broncoh	4
17. **(+)**	**MS**	**Open Cap: diameter**					
QN	**(b)**	small				Le Lion X13, Royal 75	3
		medium				Royal 20A, Sylvan 512	5
		large				Broncoh, Somycel 76, Sylvan A15, Sylvan 737	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
18.	**MS**	**Open Cap: thickness**					
(+)							
QN	**(b)**	thin				*Example varieties?*	3
		medium				Broncoh, Horwitu, Le Lion X13	5
		thick				Somycel 205, Sylvan A15, Sylvan 737	7
19.	**VG**	**Open Cap: margin**	*Explanation required*				
(*)							
(+)							
QN	**(b)**	not frayed				Le Lion C9, Royal 26A	3
		partly frayed				Broncoh, Horwitu, Somycel 205	5
		frayed				Horronda	7
20.	**VG**	**Open Cap: shape of central part of upper side**					
(*)							
(+)							
QN	**(b)**	rounded				Sylvan 512	1
		flat				Sylvan A15	2
		depressed				Broncoh	3
21.	**VG**	**Discoloration of surface after cutting**	*Explanation required as to where and when this should be observed, and whether characteristic should be relocated after char. 15* *HU remarks that they thought this characteristic related to stipe, since it is a problem of stipe (correct example varieties?). Problem arises if the relative humidity is too high and the fruit body cannot evaporate and the remains too wet.*				
(+)							
QN	**(a)**	weak				Broncoh, Commissaris Cremers	3
		medium				Horbita, Sylvan A15, Sylvan 737, Sylvan 512	5
		strong					7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
22. (*) (+)	**MG**	**Flushing pattern: earliness of first flush**					
QN	**(c)**	early				Le Lion X13, Horwitu	3
		medium				Broncoh, Royal 26A	5
		late				Le Lion X20, Somycel 205	7
23. (+)	**MG**	**Duration of first flush**					
QN	**(c)**	short				*Example varieties?*	3
		medium				Broncoh, Sylvan A15, Sylvan 737	5
		long				*Example varieties?*	7
24. (*) (+)	**MG**	**Earliness of second flush**	*HU proposes to delete characteristic 24. Agaricus mushroom is environmentally sensitive to the growing conditions, so if these are not optimized, there could be a lot of fruit bodies between the flushes but none in the second flush. Conversely, Agaricus has many other influences during the following flushes which can change the form of the fruit body, so it would be sufficient to observe only the first flush.*				
QN	**(c)**	early				*Example varieties?*	3
		medium				Broncoh	5
		late				*Example varieties?*	7
25. (+)	**MG**	**Duration of second flush**					
QN	**(c)**	short				*Example varieties?*	3
		medium				Broncoh	5
		long				*Example varieties?*	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:

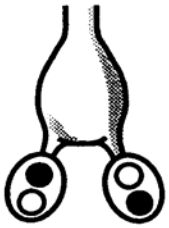
(a) Stipe, cap and gills: Unless otherwise indicated, all characteristics of the fruit bodies, the cap, the stipe and the gills should be recorded at harvest maturity (button stage 1, 2 and 3 [see annex page] hand picked mushrooms; freshly harvested).

(b) Open cap: The characteristics of the open cap should be recorded as soon as the cap is fully spread (and not postponed until later date). Records should preferably be made from first and second flush; the third flush may give some additional information.

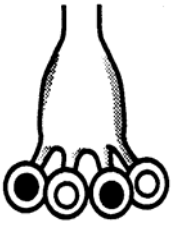
(c) Flushing pattern: *Explanation required on time of observation for characteristics 22, 23, 24 and 25*

8.2 Explanations for individual characteristics

Ad. 1: Basidium: number of spores



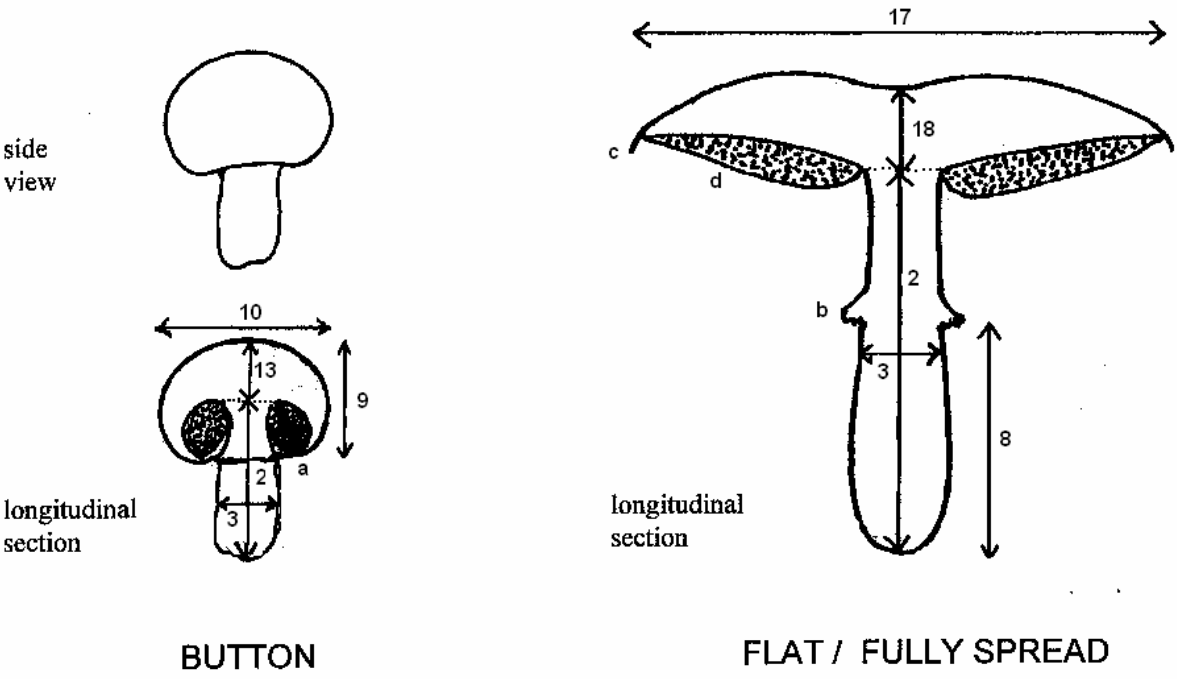
2
two



4
four

3
between 2 and 4

Ad. 2: Stipe: length
Ad. 3: Stipe: diameter
Ad. 8: Stipe: distance from base to veil remnant ring
Ad. 9: Cap: height
Ad. 10: Cap: diameter
Ad. 13: Cap: thickness in longitudinal section
Ad. 17: Open Cap: diameter
Ad. 18: Open Cap: thickness
Ad. 19: Open Cap: margin

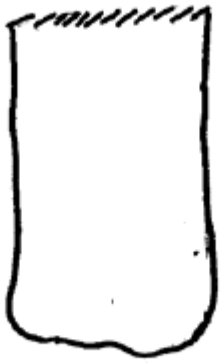


Explanation:

2: Stipe: length
3: Stipe: diameter
8: Stipe: distance from base to veil remnant ring
9: Cap: height
10: Cap: diameter
13: Cap: thickness
17: Open Cap: diameter
18: Open Cap: thickness
19: Open Cap: margin explanation required!

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

Ad. 5: Stipe: shape in longitudinal section

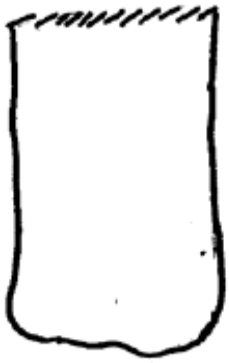


1
rectangular

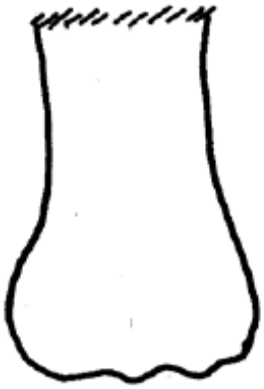
2
trapezoidal

Ad. 6: Stipe: swollen base in longitudinal section

Drawing needs to be improved

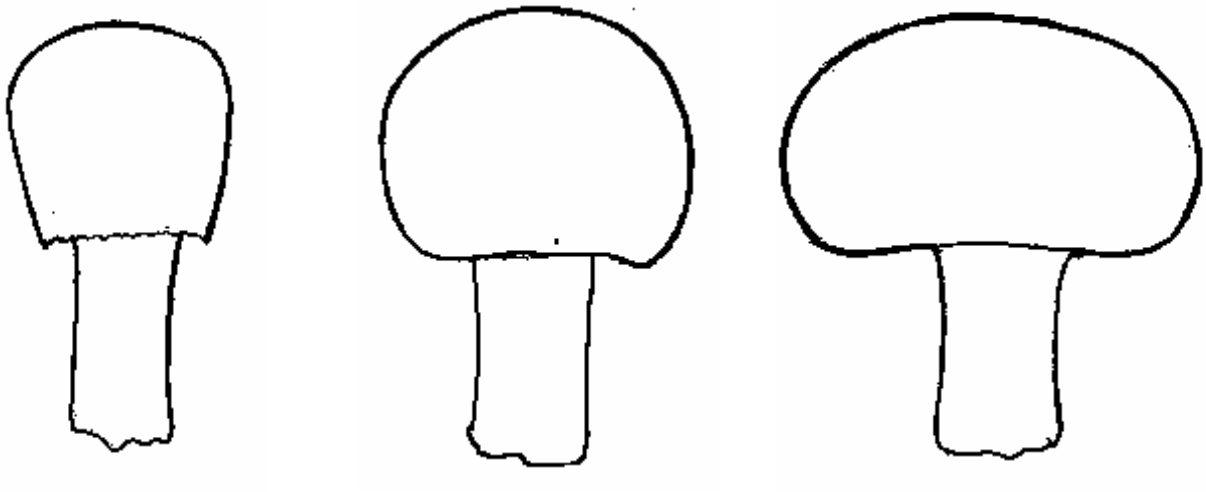


1
absent



9
present

Ad. 12: Cap: shape in longitudinal section



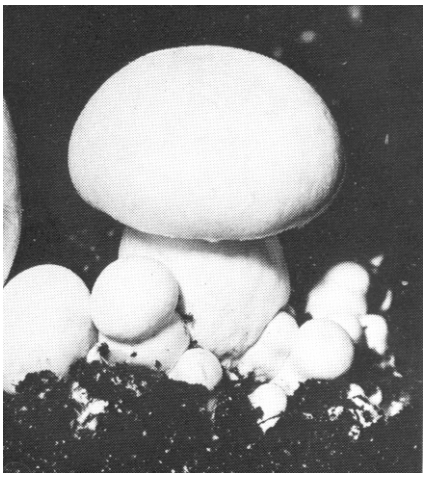
1	2	3
obovate	circular	transverse elliptic

Ad. 14: Cap: amount of scales

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.

Note also that the side of the cap is more scaly than the top!



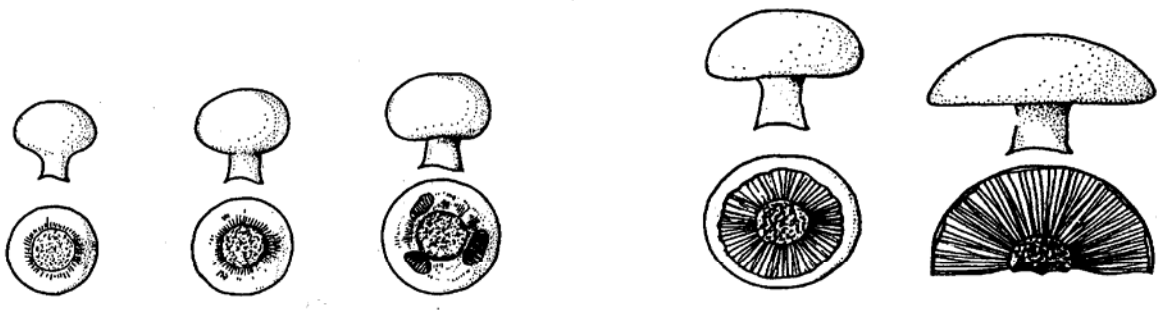
1	9
absent of very low	very high

Ad. 16: Gills: color at time of breaking of the veil
Ad: 19: Open Cap: margin

Clarification required on best time to observe:

FR breeder: Characteristic 16 should be observed at veil breaking, not after since then all spores will become brown. The color of the gills before veil breaking could be interesting as well since it may be pink or light brown.

FR breeder: Characteristic 19: 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. 20: Open Cap: shape of central part of upper side

1 rounded
2 flat
3 depressed

Ad. 21: Discoloration of surface after cutting

Explanation required as to where and when it should be done

FR breeder: Susceptibility to bruising after cutting or rubbing the mushroom cap I an important character that varies across hybrids due to enzymatic phenomena. Rubbing the surface of the mushroom cap (stage of harvest, 2-3) seems more appropriate than cutting the cap. Cutting transversely the stipe at harvest or just after may be interesting as well.

Ad. 22: Flushing pattern: earliness of first flush

Explanation required

Ad. 23: Duration of first flush

Explanation required

Duration of flushes is rather difficult to describe since it may depend on the decision to pick all the mushrooms on the same day. For example, for canning, mechanical harvesting is done simultaneously for all the mushrooms of the bed, whilst to harvest and sell fresh mushrooms, hand picking is generally done for several (3-5) days. Several cultural techniques also have an influence on the grouping of the flush (management of climate parameters at the pinhead phase.

Ad. 24: Earliness of second flush

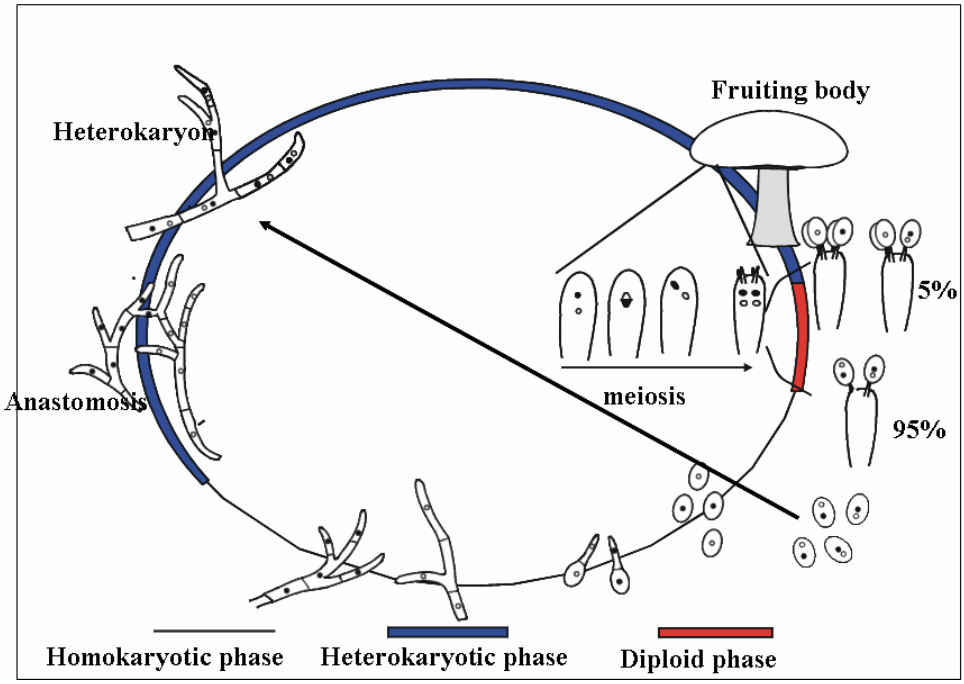
Explanation required

Ad. 25: Duration of second flush

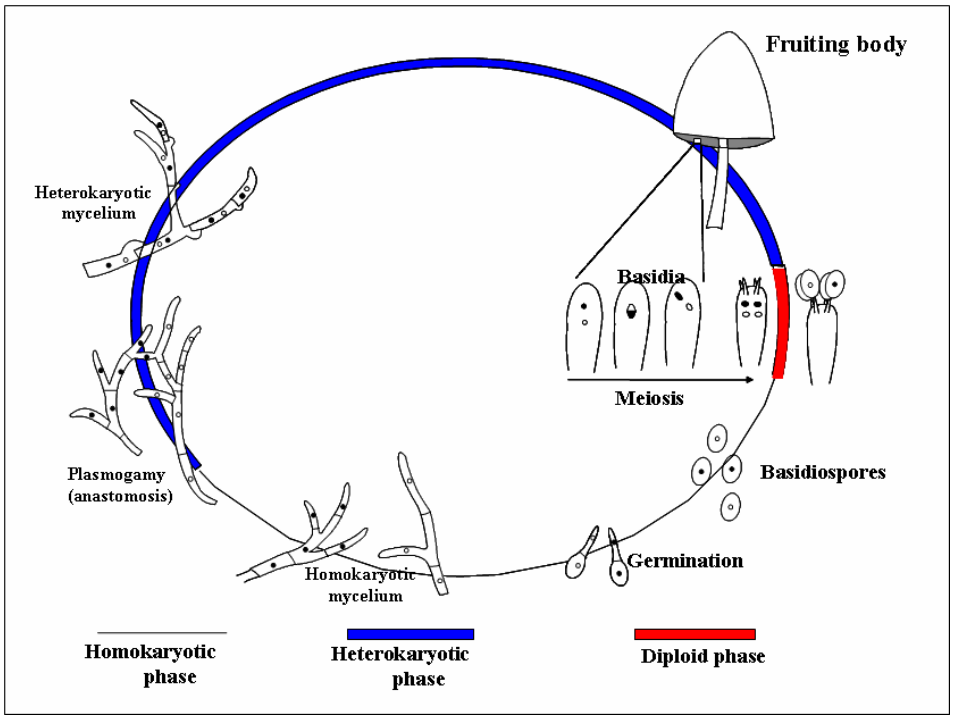
Explanation required

Duration of flushes is rather difficult to describe since it may depend on the decision to pick all the mushrooms on the same day. For example, for canning, mechanical harvesting is done simultaneously for all the mushrooms of the bed, whilst to harvest and sell fresh mushrooms, hand picking is generally done for several (3-5) days. Several cultural techniques also have an influence on the grouping of the flush (management of climate parameters at the pinhead phase.

8.3 Additional information: Life cycle of Agaricus bisporus L.



Life cycle of *Agaricus bisporus* var. *bisporus* L.



Life cycle of *Agaricus bitorquis* 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

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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 bisporus* L. *Agaricus bitorquis* L. *Agaricus arvensis* L.
1.2 Common Name	Agaricus Mushroom

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

4.2.1 Vegetative propagation

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]

[#] 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: number of spores**		
	two	Broncoh, Horronda, Horwitu	2[ ]
	between 2 and 4		3[ ]
	four	Horbita, Horvensis	4[ ]
5.2 (5)	**Stipe: shape in longitudinal section**		
	rectangular	Horronda, Horvensis, Sylvan A15, Sylvan 737	1[ ]
	trapezoid	Horwitu	2[ ]
5.3 (12)	**Cap: shape in longitudinal section**		
	obovate	Horvensis	1[ ]
	circular	Commissaris Cremers, Horronda, Sylvan 512	2[ ]
	transverse elliptic	Broncoh, Horwitu, Sylvan A15, Sylvan 737	3[ ]
5.4 (15)	**Cap: color**		
	white	Royal 75, Somycel 91, Sylvan A15, Sylvan 737, Sylvan 608	1[ ]
	grayish white	Horvensis	2[ ]
	pale yellowish	Somycel 76, Sylvan 512	3[ ]
	brown	B, 81, Broncoh, Le Lion C9, Sylvan 856	4[ ]
5.5 (20)	**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:

	Characteristics	Example Varieties	Note
5.6 (22)	**Flushing pattern: earliness of first flush**		
	early	Le Lion X13, Horwitu	3[ ]
	medium	Broncoh, Royal 26A	5[ ]
	late	Le Lion X20, Somycel 205	7[ ]

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	*[to be provided]*		

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)
(HU proposes that the applicant be obliged to provide full details of the growing conditions best suited to test the candidate variety, e.g. temperature in compost, RH, temperature at cooling back, air speed))

7.3 Resistance to pests and diseases

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]