TG/COIX(proj.1)
ORIGINAL: English
DATE: 2011-04-26

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

*

ADLAY

UPOV Code: **COIXX_MAY**

Coix ma-yuen Roman.

Coix lacryma-jobi L. var. ma-yuen (Rom. Caill.) Stapf.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Japan

to be considered by the

Technical Working Party for Agricultural Crops
at its fortieth session, to be held in Brasilia,Brazil from May 16 to 20,2011

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Coix ma-yuen Roman. *Coix lacryma-jobi* L. var. ma-yuen (Rom. Caill.) Stapf.	Adlay; Coix	Coix; Larme de Job	Coix; Tränengrass	Coix; Lágrimas de David o de Job

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 *Coix ma-yuen* Roman.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

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

0.1 kg

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

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

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

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.

3.4 Test Design

Each test should be designed to result in a total of at least 100 plants, which should be divided between at least 2 replicates.

3.5 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test, disregarding any off-type plants

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness."

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with

other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Seedling: anthocyanin coloration (characteristic 1)
(b) Time of heading (characteristic 2)
(c) Stigma: color (characteristic 5)
(d) Young grain: anthocyanin coloration (characteristic 6)
(e) Time of maturity (characteristic 7)
(f) Plant: height (characteristic 8)
(g) Culm: anthocyanin coloration (characteristic 12)
(h) Grain: main color (characteristic 24)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

(*) 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 4.1.5

(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
1. **(*)** **(+)**	**VG**	**Seedling: anthocyanin coloration**					
QL		absent				Okayamazairai	1
		present				Akishizuku, Kuroishizairai	9
2. **(*)**	**MG**	**Time of heading**					
QN	**(a)**	early				Hatoyutaka, Kuroishizairai	3
		medium					5
		late				Okayamazairai	7
3. **(+)**	**VG**	**Plant: growth habit**					
QN	**(a)**	upright					1
		semi-upright					2
		spreading					3
4.	**VG**	**Leaf: intensity of green color**					
QN	(a)	light					3
		medium					5
		dark					7
5. **(*)** **(+)**	**VG**	**Stigma: color**					
PQ		greenish white				Okayamazairai	1
		reddish purple					2
		purple				Akishizuku, Miyagizairai	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. (*) (+)	**VG**	**Young grain: anthocyanin coloration**					
QL		absent				Okayamazairai	1
		present					9
7. (*)	**MG**	**Time of maturity**					
QN	**(b)**	early				Kuroishizairai	3
		medium				Akishizuku	5
		late				Okayamazairai	7
8. (*)	**MS**	**Plant: height**					
QN	**(b)**	short				Hatoyutaka	3
		medium				Akishizuku	5
		tall				Okayamazairai	7
9.	**MS**	**Plant: number of culms**					
QN	**(b)**	few					3
		medium				Okayamazairai	5
		many				Kuroishizairai	7
10. (*) (+)	**MS**	**Plant: length of grain distribution range**					
QN	**(b)**	short				Kuroishizairai	3
		medium				Okayamazairai	5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**MS**	**Culm : diameter**					
(+)							
QN	**(b)**	small				Kuroishizairai	3
	(d)	medium				Hatoyutaka	5
		large				Okayamazairai	7
12. **(*)**	**VG**	**Culm: anthocyanin coloration**					
QL	**(b)**	absent				Okayamazairai	1
		present					9
13.	**VG**	**Culm: intensity of anthocyanin coloration**					
QN	**(b)**	weak					3
		medium					5
		strong					7
14.	**MS**	**Culm: number of sheathing bracts (Sheathing leaf with axillary inflorescence)**					
QN	**(b)**	few					3
	(d)	medium					5
		many					7
15.	**MS**	**Leaf blade: length**					
(+)							
QN	**(b)**	short					3
	(d)	medium				Hatoyutaka, Okayamazairai	5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16. **(+)**	**MS**	**Sheathing bract: length (exclude blade)**					
QN	**(b)**	short					3
	(d)	medium					5
		long					7
17. **(+)**	**VG**	**Sheathing bract: anthocyanin coloration**					
QL	**(b)**	absent				Okayamazairai	1
		present					9
18.	**VG**	**Sheathing bract: intensity of anthocyanin coloration**					
QN	**(b)**	weak					3
		medium					5
		strong					7
19.	**MS**	**Culm: total number of grains**					
QN	**(c)**	few					3
	(d)	medium					5
		many					7
20. **(+)**	**MS**	**Grain: length**					
QN	**(c)**	short					1
		medium					2
		long					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.	**MS**	**Grain: width**					
(+)							
QN	**(c)**	narrow					1
		medium					2
		broad					3
22.	**VG**	**Grain: shape**					
(+)							
PQ	**(c)**	elliptic					1
		circular				Ohotsuku N°.1	2
		ovate				Akishizuku	3
23. **(*)**	**MG**	**Grain : weight of 100**					
QN	**(c)**	low				Kuroishizairai	3
		medium				Nakasatozairai	5
		high					7
24. **(*)**	**VG**	**Grain: main color**					
PQ	**(c)**	white					1
		grey					2
		brown				Nakasatozairai	3
		dark brown				Okayamazairai	4
		black				Kuroishizairai	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25.	**VG**	**Grain: secondary color**					
PQ	**(c)**	white					1
		grey					2
		brown					3
		dark brown					4
		black					5
26.	**VG**	**Grain: intensity of luster**					
QN	**(c)**	weak					3
		medium					5
		strong					7
27. **(+)**	**VG**	**Grain: presence of furrow**					
QL	**(c)**	absent					1
		present					9
28. **(+)**	**MS**	**Decorticated grain: length**					
QN	**(c)**	short					1
		medium					2
		long					3
29. **(+)**	**MS**	**Decorticated grain: width**					
QN	**(c)**	narrow					1
		medium					2
		broad					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30.	**MG**	**Decorticated grain: weight of 100**					
QN	**(c)**	low					3
		medium					5
		high					7
31.	**VG**	**Decorticated grain: color**					
PQ	**(c)**	white					1
		light yellow					2
		light brown					3

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) Observations should be made at 50% of plants are heading.
(b) Observations should be made at 80% of grains are ripening.
(c) To be observed on fully developed grains at harvest time.
(d) To be measured on the longest culm.

8.2 Explanations for individual characteristics

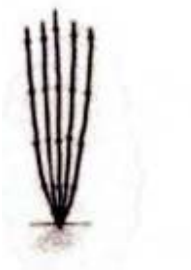
Ad. 1: Seedling: anthocyanin coloration

The anthocyanin coloration of young seedling should be observed on the 4 leaves unfolded.

1
absent

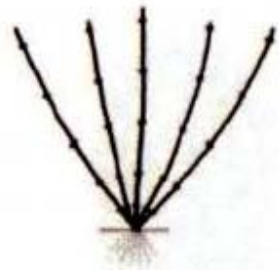
9
present

Ad. 3: Plant: growth habit



1
upright

2
semi-upright



3
spreading

Ad. 5: Stigma: color

Observations should be made at time of fully stigma.

1
greenish white

2
reddish purple

3
purple

Ad. 6: Young grain: anthocyanin coloration

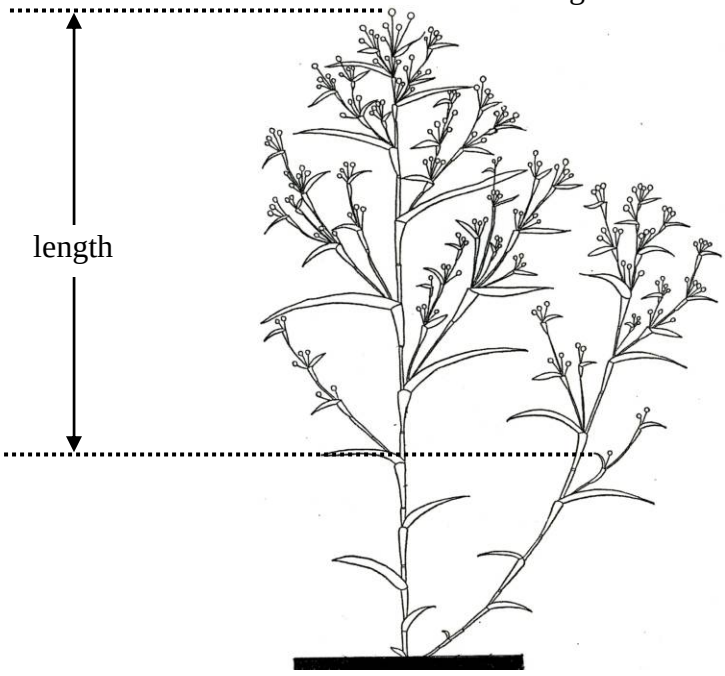
Observations should be made at time of fully stigma.

1
absent

9
present

Ad. 10: Plant: length of grain distribution range

The measurement is made from the lowest grain to the highest grain.



Ad. 11: Culm: diameter

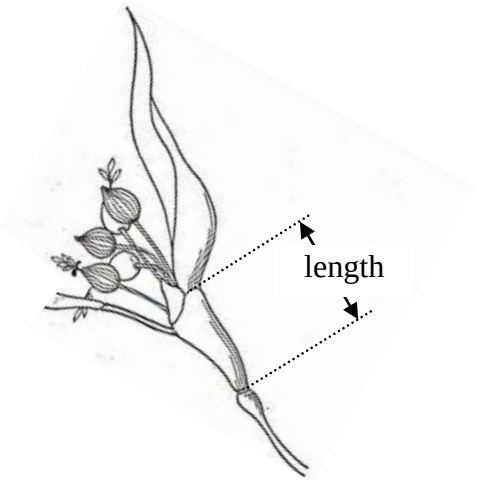
The measurement is made at a middle of internode in the central part of the longest culm.

Ad. 15: Leaf blade: length

To be measured the leaf blade at the position of 60% height of the longest culm.

Ad. 16: Sheathing bract: length (exclude blade)

The measurement is made on the largest sheathing bract of the longest culm.

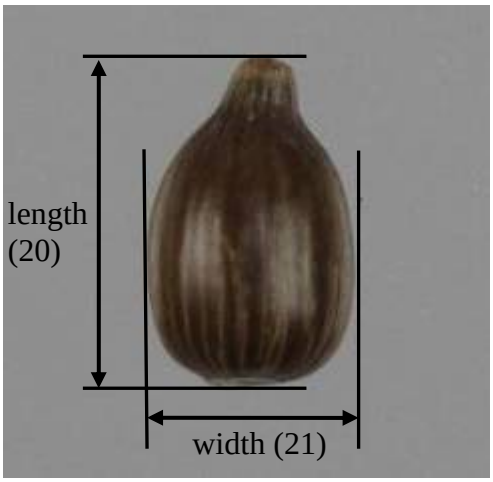


Ad. 17: Sheathing bract: anthocyanin coloration

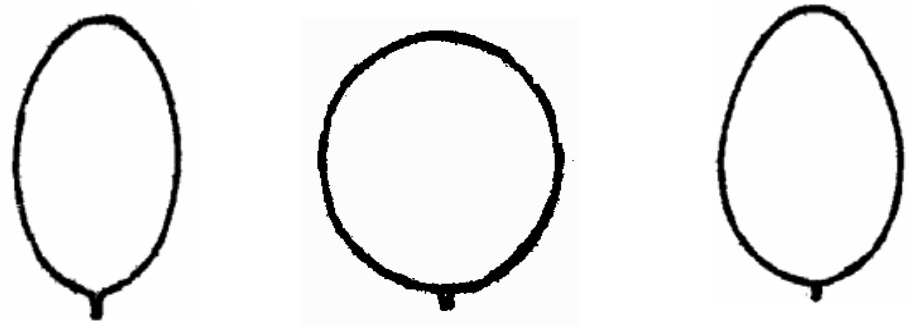
1
absent

9
present

Ad. 20: Grain: length
Ad. 21: Grain: width



Ad. 22: Grain: shape

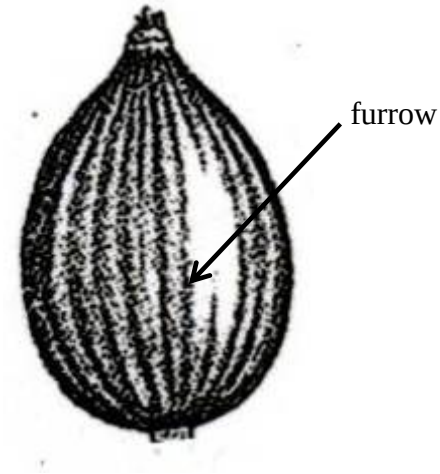


1
elliptic

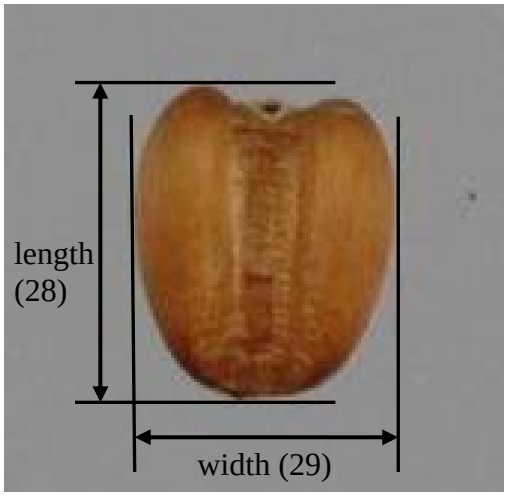
2
circular

3
ovate

Ad. 27: Grain: presence of furrow



Ad. 28: Decorticated grain: length
Ad. 29: Decorticated grain: width



9. Literature

Fujioka S., 1994-99: The Grand Dictionary of Horticulture (volume 1-3), Shogakukan, Tokyo, JP, p1159

Ishida K., 1981: Hatomugi, Nosan Gyoson Bunka Kyokai (Nobunkyo), Tokyo, JP

Tetsuka T., Tajiri T., 2009: Tokusan Shubyo, Nihon Tokusan Nosakumotsu Shubyo Kyokai (Tokusan shubyo), Tokyo, JP, pp6-15

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	*Coix ma-yuen* Roman. *(Syn. Coix lacryma-jobi* L. var. ma-yuen (Rom. Caill.) Stapf)
1.2 Common name	Adlay

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)

(……..……..…) x (……..……..…)
female parent male parent

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

(……..……..…) x (……..……..…)
female parent male parent

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]”
(please provide details)

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]
(c) Hybrid [ ]
(d) Other [ ]
(please provide details)”

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

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (1)	**Seedling: anthocyanin coloration**		
	absent	Okayamazaira	1 [ ]
	present	Akishizuku, Kuroishizairai	9 [ ]
5.2 (2)	**Time of heading**		
	early	Hatoyutaka, Kuroishizairai	3 [ ]
	medium		5 [ ]
	late	Okayamazairai	7 [ ]
5.3 (3)	**Plant: growth habit**		
	upright		1 [ ]
	semi-upright		2 [ ]
	spreading		3 [ ]
5.4 (5)	**Stigma: color**		
	greenish white	Okayamazairai	1 [ ]
	reddish purple		2 [ ]
	purple	Akishizuku, Miyagizairai	3 [ ]
5.5 (6)	**Young grain: anthocyanin coloration**		
	absent	Okayamazairai	1 [ ]
	present		9 [ ]

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

	Characteristics	Example Varieties	Note
5.6 (7)	**Time of maturity**		
	early	Kuroishizairai	3 [ ]
	medium	Akishizuku	5 [ ]
	late	Okayamazairai	7 [ ]
5.7 (8)	**Plant: height**		
	short	Hatoyutaka	3 [ ]
	medium	Akishizuku	5 [ ]
	tall	Okayamazairai	7 [ ]
5.8 (9)	**Plant: numbers of culms**		
	few		3 [ ]
	medium	Okayamazairai	5 [ ]
	many	Kuroishizairai	7 [ ]
5.9 (12)	**Culm: anthocyanin coloration**		
	absent	Okayamazairai	1 [ ]
	present		9 [ ]
5.10 (24)	**Grain: main color**		
	white		1 [ ]
	grey		2 [ ]
	brown	Nakasatozairai	3 [ ]
	dark brown	Okayamazairai	4 [ ]
	black	Kuroishizairai	5 [ ]

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	*Plant:height*	*short*	*medium*

Comments:

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

[#]7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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.

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9. Information on plant material to be examined or submitted for examination.

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details 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]