TG/SETARIA(proj.4)
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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

FOXTAIL MILLET

UPOV code: SETAR_ITA

Setaria italica (L.) Beauv.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from China

to be considered by the

Technical Working Party for Agricultural Crops
at its thirty-ninth session, to be held in Osijek, Croatia, from May 24 to 28, 2010

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Setaria italica L., *Setaria italica* (L.) Beauv.	Foxtail Millet, Italian Millet, Hungary Millet	Millet d'Italie, Millet des oiseaux, Setaire d'Italie	Kolbenhirse	Dana, Mijo de cola de zorro, Moha de Hungria

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 *Setaria italica* (L.) Beauv.

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 and, if required by the competent authority, panicles with a sufficient number of viable seeds to establish a satisfactory row of plants for observation.

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

0.5 kg and 50 panicles (if required by the competent authorities)

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

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 1,000 plants, which should be divided between at least two replicates.

3.4.2 Single panicle-rows: if tests on panicle-rows are conducted, at least 50 panicle-rows should be observed.

3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations 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.

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.

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations for the purposes of distinctness should be made on 20 plants or parts taken from each of 20 plants, 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 Row Plots: for the assessment of uniformity in a sample of 1,000 plants, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 1,000 plants 15 off-types are allowed.

4.2.3 Single panicle-rows: for the assessment of uniformity of panicle-rows, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of

a sample size of 50 panicle rows, 2 off-type panicle rows are allowed. A panicle row is considered to be an off-type panicle row if there is more than one off-type plant within that panicle row.

4.2.4 The recommended sample size for the assessment of uniformity is indicated by the following key in the table of characteristics:

(A) sample size of 1,000 plants
(B) sample size of 50 panicle-rows

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 of basal leaf sheath (characteristic 2)
(b) Time of heading (characteristic 6)
(c) Plant: length (characteristic 15)
(d) Plant: number of panicles per plant (characteristic 20)
(e) Grain: color (characteristic 29)
(f) Endosperm: type (characteristic 31)

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) See Explanations on the Table of Characteristics in Chapter 8.1
(+) See Explanations on the Table of Characteristics in Chapter 8.2
11-92 See Explanations on the Table of Characteristics in Chapter 8.3

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 11**	**First leaf: shape of tip**					
PQ		pointed				Lianggu	1
		pointed to rounded				Ribenchixu	2
		rounded				Yugu 8	3
2. **(*)** **(+)**	**VG 15**	**Seedling: anthocyanin coloration of basal leaf sheath**					
QN		absent or weak					1
		medium					2
		strong					3
3.	**VG 35**	**Foliage: intensity of green color**					
QN		light					3
		medium				Yugu 1	5
		dark					7
4. **(+)**	**VG 35**	**Plant: growth habit of tillers**					
QN		erect				Yugu 1	1
		semi-erect				Hongruangu	3
		spreading				Yin 120	5
5. **(+)**	**VG 35**	**Plant: anthocyanin coloration of leaf pedestal**					
QN		absent or very weak					1
		moderate					2
		strong					3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*) (+)	**MG**	**Time of heading**					
QN		very early				Loulixiu	1
		early				Lianggu	3
		medium				Jinmiaogu	5
		late				Ribenchixu	7
		very late				W56	9
7. (+)	**VG 47**	**Leaf: blade attitude**					
QN		erect					1
		strongly erect					2
		semi erect					3
		horizontal					4
		drooping					5
8.	**VG 45**	**Stem: anthocyanin coloration of brace roots**					
QL		absent					1
		present				Ribenchixu	9
9. (+)	**VG 65**	**Panicle: length of bristles**					
QN		very short				Yugu 8	3
		medium				Lianggu	5
		very long				Ribenchixu	7
10.	**VG 65**	**Panicle: anthocyanin coloration of bristles**					
QL		absent				Yugu 8	1
		present					9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. (*) (+)	**VG 65**	**Anther: color**					
PQ		white				Yugu 8	1
		orange				Hongmiaoqing	2
		brown				Yegu 5	3
12.	**MG 71**	**Flag leaf : length of blade**					
QN		short				Loulixiu	3
		medium				Lianggu	5
		long				Yegu 5	7
13. (+)	**MG 71**	**Flag leaf : width of blade**					
QN		very narrow				Loulixiu	1
		narrow				Hongshilixiang	3
		medium				Anai 4	5
		broad					7
14.	**VG 71**	**Flag leaf: anthocyanin coloration of blade**					
QN		absent or very weak				Jinmiaogu	1
		weak					3
		medium					5
		strong					7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15. (*) (+)	**MG 71**	**Plant: length**					
QN		very short				Loulixiu	1
		short					3
		medium				Kenya	5
		tall				Lianggu	7
		very tall				Yintianhan	9
16. (+)	**MG 71**	**Plant: stem diameter**					
QN		small				Loulixiu	1
		medium				Yintianhan	3
		large					5
17.	**VG 81**	**Glume: anthocyanin coloration**					
QL		absent				Yanandali	1
		present				Yugu 8	9
18. (+)	**MG 91**	**Plant: number of elongated internodes**					
QN		few				Hongshilixiang	3
		medium				Yegu 5	5
		many				W 77	7
19. (+)	**MG 91**	**Plant: number of layers of brace roots**					
QN		non or very few				Kenya	1
		few				Lianggu	3
		medium				Yintianhan	5
		many					7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
20. (+)	**MG 91**	**Plant: number of panicles per plant**					
QN		few				Lianggu	3
		medium				Loulixiu	5
		many					7
21. (+)	**VG 91**	**Panicle: attitude**					
QN	**(a)**	erect				Lazhutai	1
		semi erect				Yugu 8	3
		horizontal				Lianggu	5
		moderately drooping					7
22. (+)	**MG 91**	**Plant: length of peduncle**					
QN	**(a)**	short				Ai 88	3
		medium				Anai 17	5
		long				Anai 3	7
23. (*) (+)	**VG 91**	**Panicle: shape**					
PQ	**(a)**	conical				Hongfengu	1
		spindle				Kenya	2
		cylindrical				Ai 88	3
		club				Taohuami	4
		duck mouth				W 59	5
		cat foot				Maotigu	6
		branched				Foshougu	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24. (*)	**MG 92**	**Panicle: length**					
QN	**(a)**	short				Loulixiu	3
		medium				Hongshilixiang	5
		long				Yintianhan	7
25. (*) (+)	**MG 92**	**Panicle: density (excluding varieties with branched panicles)**					
QN	**(a)**	lax				Jinmiaogu	3
		medium				Lianggu	5
		dense				Yugu 8	7
26. (+)	**VG 92**	**Panicle: number of grains on lateral branch**					
QN	**(a)**	few				Ribenchixu	3
		medium				Lianggu	5
		many				W 77	7
27. (*)	**MG 92**	**Grain: weight of 1000 grains**					
QN		low				W 67	3
		medium				Hongmiaoqing	5
		high				Lianggu	7
28. (+)	**VG 92**	**Grain: shape**					
PQ		round					1
		medium ovate					2
		narrow ovate					3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
29. (*)	**VG 92**	**Grain: color**					
PQ		whitish				Anai 3	1
		light yellow				Jinmiaogu	2
		medium yellow				Ribenchixu	3
		brown					4
		red				Hongmiaoqing	5
		black				Heiniangu	6
30. (*)	**VG 92**	**Dehusked grain: color (not polished)**					
PQ		white				Taohuami	1
		light yellow				Lianggu	2
		medium yellow				Yugu 8	3
		grey				Hongmiaoqing	4
31. (+)	**VG 92**	**Endosperm:type**					
PQ		waxy					1
		non-waxy					2

8. Explanations on the Table of Characteristics

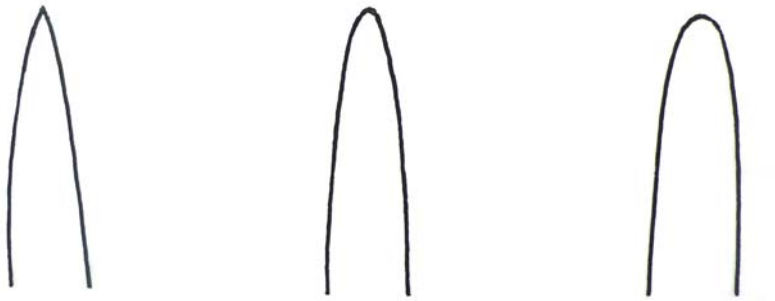
8.1 Explanations covering several characteristics

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

(a) To be observed on the panicle of the main stem.

8.2 Explanations for individual characteristics

Ad. 1: First leaf: shape of tip



1	2	3
pointed	pointed to rounded	rounded

Ad. 2: Seedling : anthocyanin coloration of basal leaf sheath

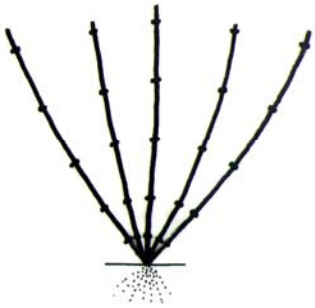
The observation should be made on the bottom of shoot after the 7th leaf fully developed.

1	2	3
absent or weak	medium	strong

Ad. 4: Plant: growth habit of tillers

1
nearly erect

3
semi-erect



5
spreading

Ad. 5: Plant: anthocyanin coloration of leaf pedestal

1
absent or very weak

2
moderate

3
strong

Ad. 6: Time of heading

Time of heading is the time when 50% of plants are reached stage 45, or inflorescences of 50% plants is visible.

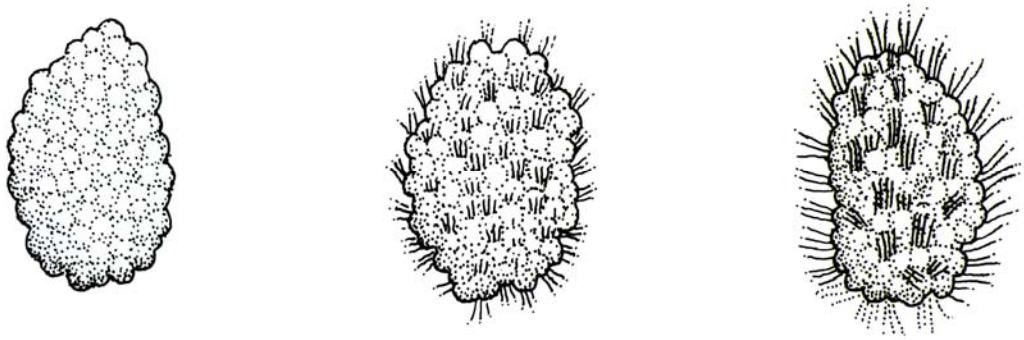
Ad. 7: Leaf blade: attitude

The observation should be made on the middle third leaves of the stem.

1	2	3	4	5
erect	strongly erect	semi-erect	horizontal	drooping

Ad. 9: Panicle: length of bristles

Bristles in foxtail millet originated from the sterile spikelets.



1	3	5
very short	medium	very long

Ad. 11: Anther: color

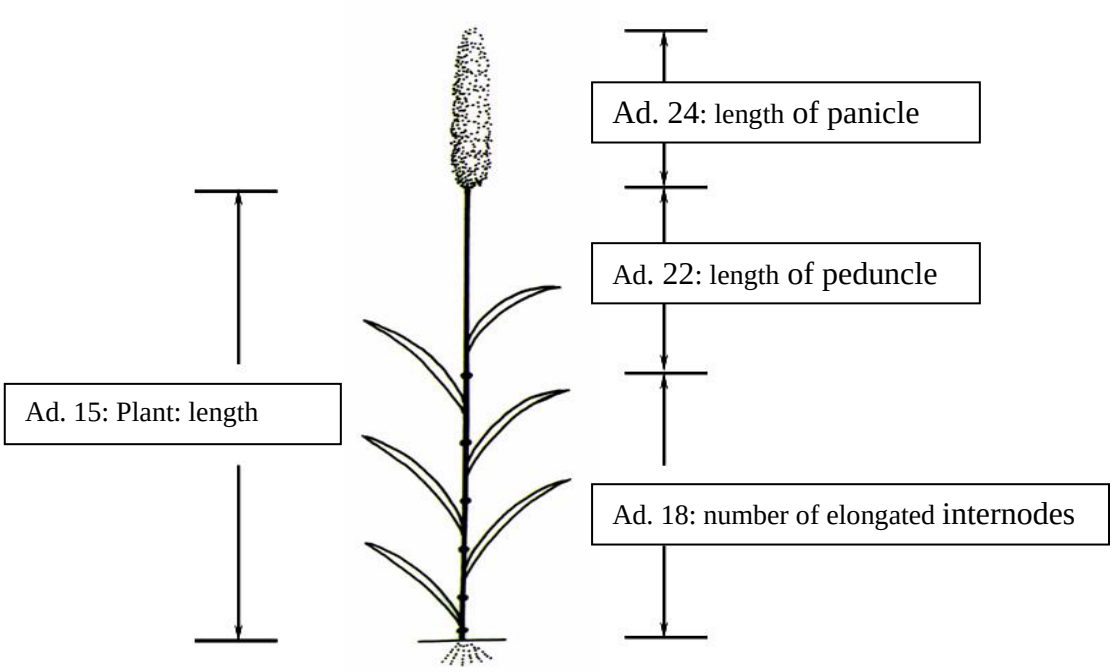
The observation should be made early in the morning before the anthers splits.

Ad. 13: Flag leaf: width of blade

The observation should be made at the broadest part of the blade.

Ad. 15: Plant: length

See explanation of drawing. Plant length to be observed from the natural base of the main stem to the bottom point of the panicle (cm).



Ad. 16: Plant: stem diameter

To be observed at the third elongated nodes from the base.

Ad. 18: Plant: number of elongated internodes

See explanation at Ad. 15. Count the elongated internodes, excluding the peduncle.

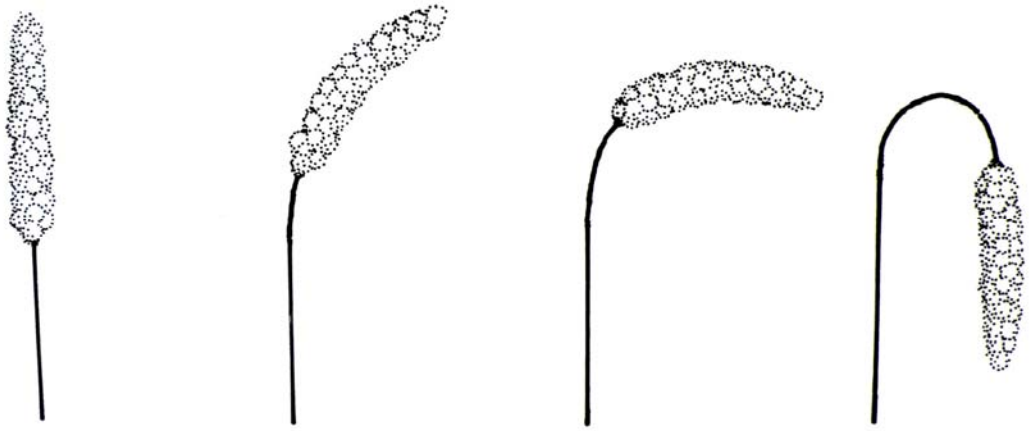
Ad. 19: Plant: number of layers of brace roots

To provide Explanation or photographs

Ad. 20: Plant: number of panicles per plant

This characteristic should be observed on spaced planted plants.

Ad. 21: Panicle: attitude

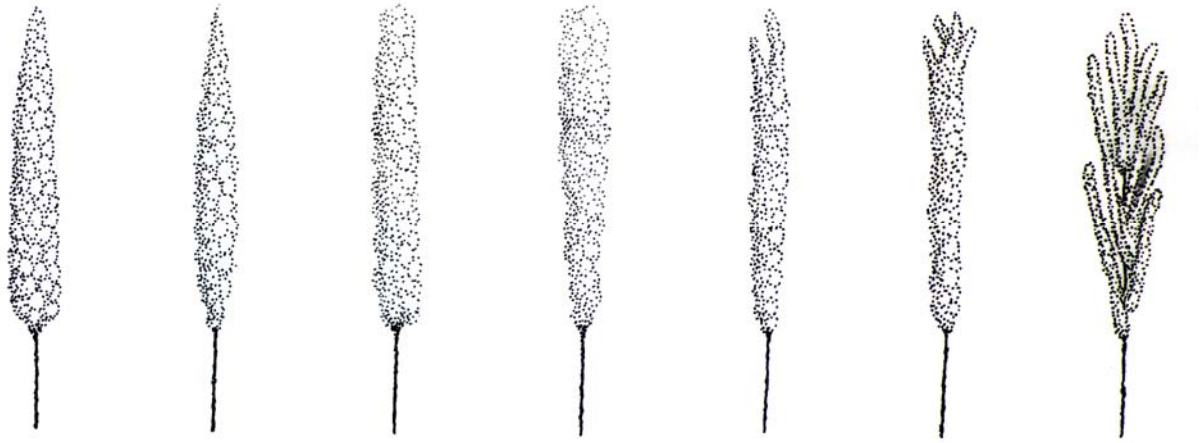


1	3	5	7
erect	semi-erect	horizontal	moderately drooping

Ad. 22: Pant: length of peduncle

See explanation at Ad. 15. The length of peduncle should be observed from the base of the panicle to the flag leaf node.

Ad. 23: Panicle: shape



1	2	3	4	5	6	7
conical	spindle	cylindrical	club	duck mouth	cat foot	branched

Ad. 24: Panicle: length

See explanation at Ad. 15.

Ad. 25: Panicle: density (excluding varieties with branched panicles)

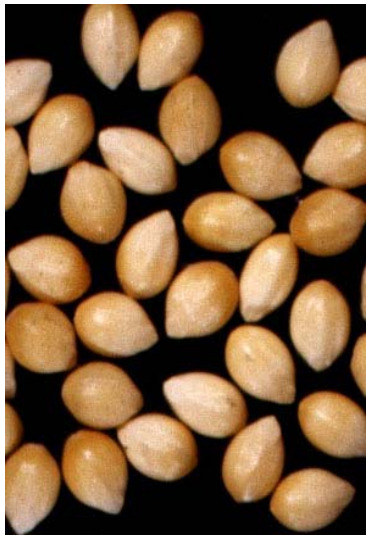
The density of the main stem panicle is the number of rachis per centimeter in the middle third of the panicle.

Ad. 26: Panicle: number of grains on lateral branch

To be observed on one lateral branch of the middle third of a main stem panicle.

Ad. 28: Grain: shape

1
round



2
medium ovate

3
narrow ovate

Ad. 31: Endosperm: type

The characteristic is observed by reaction to Potassium Iodide solution: waxy type endosperm is stained reddish purple; non-waxy type endosperm is stained blue purple.

8.3 Decimal Code for the Growth Stages of Cereals (Foxtail Millet)

2-digit Code	General Description	
1	2	
Germination		
00	Dry seed	
01	Start of imbibition	
02		
03	Imbibition complete	
04		
05	Radicle emerged from caryopsis	
06		
07	Coleoptile emerged from caryopsis	
08		
09	Leaf just at coleoptile tip	
Seedling growth		
10	First leaf emerge through coleoptle	
11	First leaf unfolded	
12	2 leaves unfolded	
13	3 leaves unfolded	
14	4 leaves unfolded	
15	5 leaves unfolded	
16	6 leaves unfolded	
17	7 leaves unfolded	
18	8 leaves unfolded	
19	9 or more leaves unfolded	
Tillering		
20	Main shoot only	
21	Main shoot and 1 tiller	
22	Main shoot and 2 tillers	
23	Main shoot and 3 tillers	
24	Main shoot and 4 tillers	

2-digit Code	General Description	
25	Main shoot and 5 tillers	
26	Main shoot and 6 tillers	
27	Main shoot and 7 tillers	
28	Main shoot and 8 tillers	
29	Main shoot and 8 tillers	
Stem elongation		
30	Pseudo stem erection	
31	1st node detectable	
32	2ed node detectable	
33	3rd node detectable	
34	4th node detectable	
35	5th node detectable	
36	6th node detectable	
37	7th node detectable	
38	8th node detectable	
39	Flag leaf/collor just visible	
Booting and inflorescence emergence		
40		
41	Boots swollen	
43	10% of inflorescence visible/emerged	
45	50% of inflorescence visible/emerged	
47	All inflorescence visible/emerged	
49		
Anthesis		
60	Beginning of anthesis	
65	Anthesis half-way	
69	Anthesis complete	
Milk development		
70		
71	Caryopsis watery ripe	

2-digit Code	General Description	
73	Early milk	
75	Medium milk	
77	Late milk	
Dough development		
80		
81	Early dough	
85	Soft dough	
89	Hard dough	
Ripening		
90		
91	Caryopsis hard (difficult to divide by thumbnail)	
92	Caryopsis hard (can on longer be dented by thumbnail)	
93	Caryopsis loosening in daytime	
94	Over-rip, straw dead and collapsing	
95	Seed dormant	
96	Viable seed giving 50% germination	
97	Seed dormancy ended	

9. Literature

Xianmin Diao, Wei Li, Zhihai Zhao, Wenying Zhang, Hui Zhi, Yongfang Wang, Runqi Wang, Peng Wang, 2005: Guidelines for the Conduct of Test for Distinctness, Uniformity and Stability of Foxtail Millet (*Setaria italica* Beauv.). Chinese standard, in Chinese.

Yinmei Li et al., 1997: Breeding of Foxtail Millet. Agriculture Press, Beijing, CN.

Institute of Plant Germplasm, CAAS, 1985: Catergery of Chinese Land Races of Foxtail Millet, Agriculture Press. Beijing, CN.

Ping Lu, 2006: Descriptors and Data standard for foxtail millet (*Setaria italica* (L.) Beauv.). China Agriculture Press, Beijing, CN.

Zadoks, J.C., Chang, T.T., Konzak, C.F., 1974: A decimal code for the growth stages of cereals. Weed Research 14: pp. 415-421.

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	*Setaria italica* (L.) Beauv.
1.2 Common Name	Foxtail millet

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)

4.2 Method of propagating the variety

LE: PLEASE COMPLETE

[#] 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 (2)	**Seedling: anthocyanin coloration of basal leaf sheath**		
	absent or weak		1 [ ]
	medium		2 [ ]
	strong		3 [ ]
5.2 (6)	**Time of heading**		
	very early	Loulixiu	1 [ ]
	very early to early		2 [ ]
	early	Lianggu	3 [ ]
	early to medium		4 [ ]
	medium	Jinmiaogu	5 [ ]
	medium to late		6 [ ]
	late	Ribenchixu	7 [ ]
	late to very late		8 [ ]
	very late	W 56	9 [ ]

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

	Characteristics	Example Varieties	Note
5.3 (15)	**Plant: length**		
	very short	Loulixiu	1 [ ]
	very short to short		2 [ ]
	short		3 [ ]
	short to medium		4 [ ]
	medium	Kenya	5 [ ]
	medium to tall		6 [ ]
	tall	Lianggu	7 [ ]
	tall to very tall		8 [ ]
	very tall	Yintianhan	9 [ ]
5.4 (20)	**Plant: number of panicles per plant**		
	very few		1 [ ]
	very few to few		2 [ ]
	few	Lianggu	3 [ ]
	few to medium		4 [ ]
	medium	Loulixiu	5 [ ]
	medium to many		6 [ ]
	many		7 [ ]
	many to very many		8 [ ]
	very many		9 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (29)	**Grain: color**		
	whitish	Anai 3	1 [ ]
	light yellow	Jinmiaogu	2 [ ]
	medium yellow	Ribenchixu	3 [ ]
	brown		4 [ ]
	red	Hongmiaoqing	5 [ ]
	black	Heiniangu	6 [ ]
5.6 (31)	**Endosperm:type**		
	waxy		1 [ ]
	non-waxy		2 [ ]

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	*Leaf: attitude*	*upwards*	*downwards*

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.

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 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]