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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

MILLET

(*Panicum miliaceum* L.)

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

to be considered by the
Technical Working Party for Agricultural Crops at its thirty-second session
to be held in Tsukuba, Japan, from September 8 to 12, 2003

Alternative Names:*

Latin	*English*	*French*	*German*	*Spanish*
Panicum miliaceum L.	Common Millet	Millet commun, Panic millet, Panic faux millet	Rispenhirse	Mijo común

ASSOCIATED DOCUMENTS

These guidelines should be read in conjunction with document TG/1/3, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (hereinafter referred to as the "General Introduction") and its associated "TGP" documents.

{Other associated UPOV 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 *Panicum miliaceum* L. of the family *Poaceae*.

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 seeds.

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

2.3.1 General

1kg

2.3.2 Panicles:

If requested by the competent authority, at least 50 panicles should also be submitted. The panicles should be well developed and not obviously affected by any pest or disease. They should contain a sufficient number of viable seeds to establish a satisfactory row of plants for observation.

2.4 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. 5 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.6 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 Duration of Tests

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

3.2 Testing Place

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be observed at that place, the variety may be tested at an additional place.

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.

3.3.1 Stage of development for the assessment

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 at the end of Chapter 8.

3.3.2 Type of observation – visual or measurement

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]

3.3.3 Observation of color by eye

Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

3.4 Test Design

3.4.1 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.

3.4.2 Each test should be designed to result in a total of at least 1000 plants, which should be divided between two or more replicates.

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

First growing cycle: row plots type A (see table below) to result in a total of at least 1000 plants, which should be divided between two replications.

Second growing cycle: four types of plots:

- Row plots type A: with the seed submitted by the applicant.

- Row plots type A-1: with seed harvested from the row plots A of the first growing cycle.

- Plots type B: made with the seed from the panicles submitted by the applicant (50 panicles)

- Plots type B: if necessary made with panicles selected from off-type plants collected from all the plots of the candidate variety.

Types of plots and assessment

Type of plot	Name of plot	Kind of test	Note
A	row	distinctness	first and second growing cycle with seed submitted by the applicant
A1	row	stability	second growing cycle with seed harvested from the row plots A of the first growing cycle
B	panicle 1	uniformity stability	second growing cycle with panicles submitted by the applicant (50 panicles)
P	panicle 2 (special)	uniformity	If necessary to assess lack of uniformity. During the second growing cycle with panicles selected from off-type plants gathered from all plots of the candidate variety.

Plot parameters

Plot Parameters							
type of plot	number of replications	number of rows	length m	Width m	Area m2	rows width cm	distance between plants in the row cm
The first year of tests							
A	2	6	4,0	2,7	10,8	33-45	=2,0
The second year of tests							
A	2	6	4,0	2,7	10,8	33-45	=2,0
A1	1	6	4,0	2,7	10,8	33-45	=2,0
B	1	50				33-45	10.0
P	1		2,0	2,0	4,0	33-45	10.0

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations should be made on 20 plants or parts taken from each of 20 plants.

Number of plants					
Type of plot	to assess				
	Distinctness	**Uniformity**		**Stability**	
		structure	qualitative characters	structure	qualitative characters
The first year of tests					
A	all	25	all	-	-
The second year of tests					
A	all	25	all	-	-
A1	-	-	-	25	all
B	-	25	all	25	all
P	-	25	all	-	-

3.6 Additional Tests

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

5. 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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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 of seed-propagated varieties, the recommendations in the General Introduction for self-pollinated varieties should be followed, as appropriate.

4.2.3 For the assessment of uniformity on a row plot, a population standard of 0.5 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 1000 plants, the maximum number of off-types allowed would be 9.

4.2.4 For the assessment of uniformity on single "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 plants, 4 off-type is allowed.

4.3 Stability

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

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

6. 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 is 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) Panicle: time of heading (no less than 50% of plants with panicles) (characteristic 1);
(b) Plant: height (with panicle) (characteristic 2);
(c) Grain glum: anthocyanum coloration (characteristic 12);
(d) Panicle: shape (characteristic 15);
(e) Cariopsis: color of flower glumes (characteristic 25).

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

7. 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 Section 6.1.2

(QL) Qualitative characteristic – see Section 6.3
(QN) Quantitative characteristic – see Section 6.3
(PQ) Pseudo-qualitative characteristic – see Section 6.3

(+) See Explanations on the Table of Characteristics in Chapter 8.

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

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. (*)	**51-55 VG**	**Panicle: time of heading (no less than 50% of plants with panicles)**					
		very early				Omske 9	1
		early				Kyivske 96	3
		medium				Kharkivske 56	5
		late				Kharkivske kormove	7
		very late				Illichovske	9
2. (*)	**81-92 M**	**Plant**: **height (including panicle)**					
		short				Karlik 305, Orlovskiy karlik	3
		medium				Kyivske 96, Charivne, Kharkivske 86	5
		long				Veselopodilske 16, Novokyivske 01, Kharkivske 57	7
3.	**56-59 VG**	**Leaf: anthocyanin coloration**					
		absent				Sonyachne	1
		present				Lilove	9
4.	**56-59 VG**	**Leaf: intensity of anthocyanin coloration**					
		weak				Lilove, Veselopodolyanske 305-54	3
		medium				Veselopodolyanske 403	5
		strong				Irtyshske 201	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5.	**56-59 M**	**Flag leaf: length**					
		short				Veselopodilske 16, Charivne	3
		medium				Syayvo, Kyivske 87, Myronivske 51	5
		long				Kharkivske 71	7
6.	**56-59 M**	**Flag leaf: length**					
		narrow				Omske 9, Kharkivske 10	3
		medium				Veselopodolyanske 16, Novo Kyivske 01	5
		broad				Kharkivske 86, Omriyane	7
7.	**56-59 VG**	**Leaf: attitude of blade**					
		erect				Saratovske 8	1
		semi-erect				Veselopodilske 16, Kyivske 87	3
		horizontal				Myronivske 51, Kyivske 96	5
		drooping				Voronizke 899	7
8.	**70-79 M**	**Axis: number of nodes (Internode, VD)**					
		very few				Omske 9	1
		few				Myronivske 51, Kyivske 96	3
		medium				Veselopodilske 16, Kharkivske 86, Novo Kyivske 01	5
		many				Kharkivske kormove	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	**70-79 M**	**Peduncle: length**					
		short				Veselopodolyanske 534	3
		medium				Myronivske 51, Novo Kyivske 01, Slobozhanske	5
		long				Charivne, Kharkivske 72	7
10.	**70-79 M**	**Peduncle: thickness**					
		thin				Omske	3
		medium				Veselopodolyanske 632	5
		thick				Myronivske 94, Veselopodilske 16	7
11.	**60-65 VG**	**Stigma: coloring**					
		light pink				Kyivske 96	1
		pink				Kharkivske 31	2
		violet				Lilove	3
12. (*)	**70-79 VG**	**Spikelets glum: anthocyanin coloration**					
		absent				Myronivske 51	1
		present				Lilove	9
13.	**70-79 VG**	**Spikelets glum: intensity of anthocyanin coloration**					
		weak				Veselopodolyanske 403	3
		medium				Podolyanske 24/273	5
		strong				Lilove	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14.	**73-79 VS**	**Twigs: presence of pillows**					
		absent				Charivne, Omriyane	1
		only at twigs 1-2-nd is ordinal				Myronivske 51, Novokyivske 01	2
		up to ½ of panicle				Sredneruske	3
		up to ½ of panicle				Zoryane, Imunne 366	4
		present in all				Syayvo, Veselopodolyanske 632	5
15. (*) (+)	**65-69 VG**	**Panicle: shape**					
		branchy				Omske 9	1
		loosely spreading				Kyivske 87, Veselopodilske 16	3
		oblate				Myronivske 51, Novokyivske 01	5
		oval				Chornomorske	7
		lumpy				Pikulovytske	9
16.	**81-89 M**	**Panicle: length**					
		very short				Pikulovytske	1
		short				Charivne	3
		medium				Kyivske 96	5
		long				Myronivske 94, Novokyivske 01	7
		very long				Kyivske 87, Veselopodolyanske 176	9

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
17.	**65-69 M**	**Panicle: width**					
		narrow				Novokyivske 01, Kharkivske 57	3
		medium				Myronivske 94, Slobozhanske	5
		broad				Kyivske 87, Veselopodolyanske 305-54	7
18.	**65-79 M**	**Twigs: the first order: length (second from below)**					
		very short				Pikulovytske	1
		short				Charivne, Kharkivske 86	3
		medium				Myronivske 51, Veselopodilske 16, Kyivske 96	5
		long				Veselopodolyanske 176, Sonyachne, Slobozhanske	7
		very long				Voronizhske 884	9
19. (*)	**65-69 VG**	**Panicle: arrangement**					
		erect				Omske 9	1
		semi-erect				Veselopodolyanske 305-54, Charivne	2
		inclined				Kyivske 96	3
		strongly inclined				Kharkivske 57	4

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
20. (*)	**65-69 VG**	**Twigs: degree of trailing**					
		non-trail				Charivne	1
		weak				Veselopodolyanske 632, Raduha, Kharkivske 71	3
		medium				Novokyivske 01, Slobozhanske	5
		strong				Myronivske 51, Kharkivske 31	7
		very strong				Veselopodolyanske 38	9
21.	**65-69 VG**	**Panicle: direction of trail of twinges**					
		deflect in one direction				Horlynka	1
		deflect in two directions				Voronizhske 972, Saratovske 8	2
		deflect in three directions				Veselopodolyanske 305-54, Novokyivske 01, Slobozhanske	3
		deflect in all directions				Veselopodilske 16, Kyivske 87	4
22. (*) (+)	**65-79 M**	**Panicle: density**					
		lax (< 1,0 cm)				Myronivske 51	3
		medium (1,0-1,2 cm)				Charivne	5
		dense (>1,2 cm)				Pikulovytske	7
23.	**81-92 VS**	**Spikelet: shape**					
		oblong-elliptical				Sonyachne	1
		elliptical				Veselopodolyanske 176, Lilove	2
		orbicular				Charivne	3

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24.	**80-92 VG**	**Spikelets: intensity of yellow coloring**					
		light yellow				Raduha	3
		yellow				Sonyachne	5
		dark yellow				Kyivske 96	7
25. (*)	**90-92 VG**	**Grain: coloring of flower glumes**					
		white				Tonkoplivchaste 048	1
		cream				Novokyivske 01	2
		light yellow				Veselopodolyanske 38	3
		yellow				Myronivske 51	4
		dark yellow				Saratovske 2	5
		golden				Zolotyste	6
		light red					7
		red				Lilove	8
		dark red				Veselopodolyanske 305-54	9
		chestnut				Chornosimyanne 1	10
		grey-stripy				Amurske mistseve	11
		red-spotty against a cream background				Charivne	12
26.	**90-92 VG**	**<u>Grain: red-sporty forms only:</u> size of sport**					
		small					3
		medium					5
		large				Charivne	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
27.	**90-92 VG**	**Grain: character of flowering glumes**					
		thin				Tonkoplivchaste 048	1
		rough				Kharkivske kormove	9
28. (*) (+)	**90-92 VG**	**Caryohsis: shape**					
		almost sub-globular (>0,60)				Novokyivske 01, Charivne	1
		medium sub-globular (0,55-0,61)				Veselopodolyanske 632	2
		ovate (0,49-0,54)				Myronivske 94, Kyivske 96	3
		ovate-oblong (0,43-0,48)				Myronivske 51, Kyivske 87	4
		oblong (<0,43)					5
29. (*) (+)	**90-92 M**	**Grain: size**					
		small (<2,3 mm)				Omske 9, Tonkoplivchaste 048	3
		medium (2,3-2,5mm)				Myronivske 51, Syayvo	5
		large (2,51-2,7mm)				Veselopodolyanske 176, Kyivske 96	7
		very large (>2,7)				Horlinka	9

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
30. (*)	**90-92 M**	**Weight per 1000 kernels**					
		very small (<5,0 g)					1
		small (5,0-60 g)				Ostrohovske 9, Tonkoplivchaste 048	3
		medium (6,1-7,0g)				Sonyachne	5
		large (7,1-8,0g)				Myronivske 51, Kharkivske 86	7
		very large (>8,0)				Kyivske 96, Veselopodilske 16	9
31.	**90-92 VG**	**Kernel (ungrinded): coloring**					
		light yellow				Kyivske 96	1
		yellow				Veselopodolyanske 176	2
		bright yellow				Omriyane	3
32.	**92 VG**	**Kernel: intensity of brown coloring of placental spot**					
		light				Sonyachne	1
		brown				Myronivske 51	2
		dark (almost dark)				Novokyivske 01	3
33.1 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
		Race 1				Myronivske 51	1
						Raduha	9

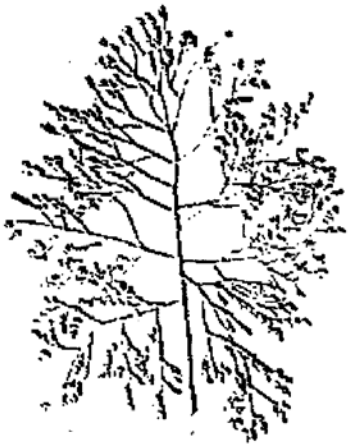
Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
33.2 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
						Myronivske 51	1
		Race 2				Novokyivske 01	9
33.3 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
		Race 3				Myronivske 51	1
						Kharkivske 56	9
33.4 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
		Race 4				Myronivske 51	1
						Kyivske 87	9
33.5 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
		Race 5				Myronivske 51	1
						Kyivske 87	9
33.6 (+)	**57-59 VS**	**Resistance to affection by smut races (Sporisorium destruens: Yank)**					
		Race 6				Myronivske 51	1
						Kyivske 87	9

9. Explanations on the Table of Characteristics

8.2 Explanations for individual characteristics

VII. Пояснення та рисунки до Таблиці ознак
VII. Explanations and figures to the Table of Characteristics

До 15. Волоть: форма
Ad 15. Panicle: shape



1
розкидиста
branchy

2
розлога
loosely spreading

3
стиснута
oblate

4
овальна
oval

5
комова
lumpy

Ad. 22. Panicle: density

The density of panicle is determined by division of the number of primary branches into length of a principal axis of panicle

Ad 28. Grain: shape

The shape of grain (V_{gc}) is calculated as a part of real grain volume from theoretical one of globe

$$V_{gc} = \frac{Vfact.}{Vtheor.} \qquad (1)$$

$Vtheor. = l \times 0{,}5236$, where (2)

l – length of grain

$Vfact.. = 0{,}5236 \times (l \times w \times t)$, де (3)

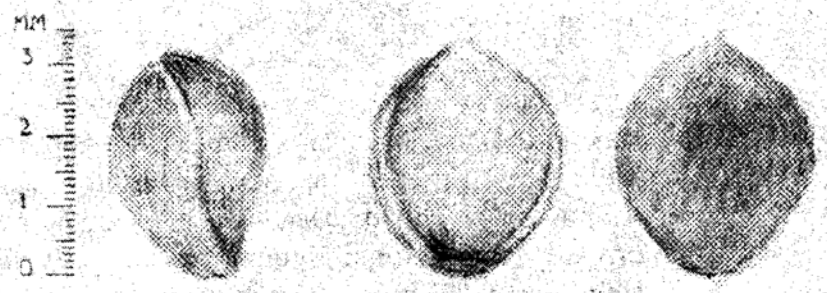
l- length , w – width, t - thickness of grain

Ad 29. Grain: size

The grain size is its geometric quantity (GQC), which is determined by a formula:

GQC= $\sqrt[3]{l \times w \times t}$, де l, t, w accordingly measurable parameters of length, thickness and width of grain.

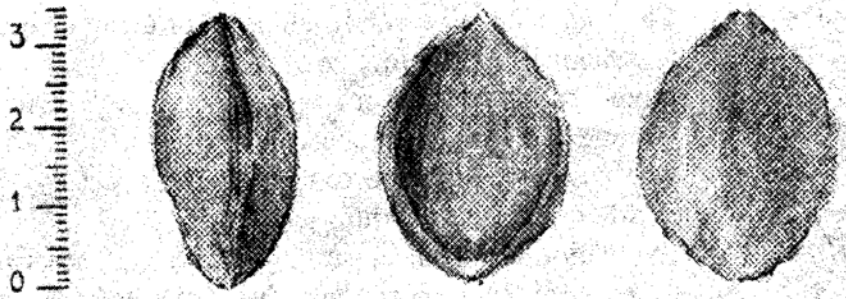
До 28-29. Зернівка: форма та розмір
Ad 28-29. Grain: the shape and size



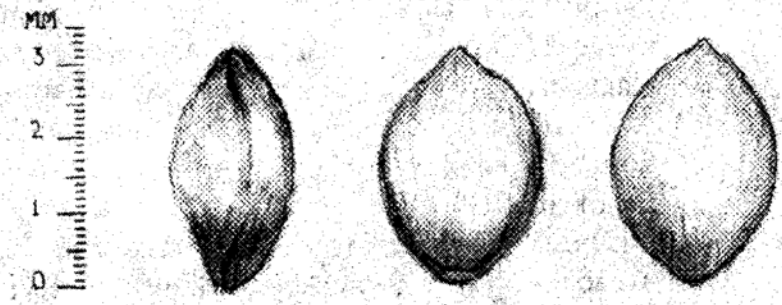
1
майже куляста
almost sub-globular

вигляд збоку	вигляд з боку внутрішньої плівки	вигляд з боку зовнішньої плівки
side view	view from side of internal glume	view from side of external glume

2
помірно куляста
medium globular



3
овальна
oval



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овально-видовжена
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Ad. 33.1 – 33.6 Resistance to affection by smut races (*Sporisorium destruens*: Yank)
Method for determination of resistance to affection by smut races

Type of medium	Conditions for inoculation
Smut races for use	1, 2, 3, 4, 5, 6
Inoculum	The spores must be viable and ripe for using of each race separately
Method of inoculation	Mechanical one: before sowing grains and smut spores carefully are mixed either hands or in paper packets, heavily shaking 100 seeds are infected with each race
Infectious load	Non less than 0,2% spores to seed weight
Place of growing	Field or hothouse conditions
Observations	Evaluation (resistance, susceptibility) and description of a response (normal or pathomorphous, dwarf plants) are carried out in a full heading phase at typical healthy plants. On each strain sample against each race specific background the number of healthy (R) and affected (S) plants is calculated the degree of affection in percent is determined. If the affected plants are not revealed (of the single affected plants are revealed), the variety is evaluated as resistant to specific race. All other results a response “susceptibility”(non-resistance) from affected plants, which tested and attributed to the spore material of smut.
Remark:	It is possible to receive races for testing at the Institute of Agriculture (Chabany, Kyevo-Svyatoshynskyi district, Kyiv region, 08162, Ukraine).

Decimal Code for the Growth Stages of Cereals

2-digit Code	General Description	Feekes Scale
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 cariopsys	
08		
09	Leaf just at coleoptile tip	
Seedling growth		
10	First leaf through coleoptile	1
11	First leaf unfolded	1
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	3
24	Main shoot and 4 tillers	3
25	Main shoot and 5 tillers	3
26	Main shoot and 6 tillers	3
27	Main shoot and 7 tillers	3
28	Main shoot and 8 tillers	3
29	Main shoot and 9 or more tillers	
Stem elongation		
30	Pseudo stem erection (2)	4-5
31	1st node detectable	6
32	2nd node detectable	7
33	3rd node detectable	
34	4th node detectable	
35	5th node detectable	
36	6th node detectable	
37	Flag leaf just visible	8
38		

39	Flag leaf/collor just visible	9
	Booting	
40		
41	Flag leaf sheath extending	
42		
43	Boots just visible swollen	10
44		10
45	Boots swollen	10
46		
47	Flag leaf sheath	10,1
48		-//-
49	First awns visible	-//-
	Inflorescence emergence	
50	First spikelet of inflorescence just visible	-//-
51	-//- -//- -//-	-//-
52	1/4 of inflorescence emerged	10,2
53	-//- -//- -//-	-//-
54	1/2 of inflorescence emerged	10,3
55	-//- -//- -//-	-//-
56	3/4 of inflorescence emerged	10,4
57	-//- -//- -//-	-//-
58	Emergence of inflorescence completed	10,5
59	-//- -//- -//-	-//-
	Anthesis	
60	Beginning of anthesis	10,51
61	-//- -//- -//-	-//-
62		
63		
64	Anthesis half-way	10,52
65	-//- -//- -//-	-//-
66		
67		
68	Anthesis complete	10,53
69	-//- -//- -//-	-//-
	Milk development	
70		
71	Caryopsis watery ripe	
72		
73	Early milk	11,1
74		
75	Medium milk	11,1
76		
77	Late milk	11,1
78		
79		
	Dough development	
80		
81		

82		
83	Early dough	11,2
84		
85	Soft dough	11,2
86		
87	Hard dough	11,2
88		
89		
	Ripening	
90		
91	Caryopsis hard (difficult to divide by thumbnail) (3)	11,3
92	Caryopsis hard (can no longer be dented by thumbnail) (4)	11,4
93	Caryopsis loosening in daytime	
94	Over-ripe, straw dead and collapsing	
95	Seed dormant	
96	Viable seed giving 50% germination	
97	Seed not dormant	
98	Secondary dormancy induced	
99	Secondary dormancy lost	
T1	Unrooting of seedlings	
T2		
T3	Rooting	
T4		
T5		
T6		
T7	Recovery of shoots	
T8		
T9	Resumption of vegetative growth	

10. Literature

11. 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 *Latin Name*	*Panicum miliaceum* L.
1.2 Common Name	Common 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)
(b) partially known cross [ ]
(please state known parent variety(ies))
(c) totally unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

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

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

6. Similar varieties and differences from these varieties

Please use the table, and space provided for comments, below 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		*(example to be inserted)*	*(example to be inserted)*

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 Special conditions for the examination of the variety

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

Yes [ ] No [ ]

7.2.2 If yes, please give details:

7.3 Other information

ASW 16 A representative color photograph of the variety should accompany the Technical Questionnaire.

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.

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

9. Information on plant material to be examined.

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 or pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details of 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]