



TWA/33/9

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**TECHNICAL WORKING PARTY
FOR
AGRICULTURAL CROPS**

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**COMPARATIVE EVALUATION OF ASTERISKED CHARACTERISTICS OF RICE
VARIETIES IN THE ORIGIN COUNTRIES AND IN JAPAN**

Document prepared by an expert from Japan

Introduction

1. In order to see how example varieties perform under different environmental conditions, especially for the characteristics No. 22 (Time of heading), a simple demonstration trial was shown on the occasion of the thirty-second session of the Technical Working Party for Agricultural Crops (TWA), held in September 2003, in Tsukuba, Japan. To secure enough seeds for that purpose, UPOV member countries were requested to send dehulled rice grains of three example varieties for maturity (one each for early, medium and late) to Japan. In late April 2002, these varieties were planted in the field of the National Institute of Crop Science (NICS), Tsukuba.

2. Due to the poor germination of dehulled grains in several varieties, only a few plants were transplanted and it is feared that some genetic distortion might have occurred in some characteristics. However, several characteristics were preliminarily checked and the results were reported in document TWA/32/4.

Method of cultivation in 2003

3. The following varieties from seven countries were grown in 2003 together with Japanese varieties representing three maturity groups from seven regions, Hokkaido to Kyushu. Of the Japanese varieties, only three from the Warm-East region are listed in the Table:

Spain: Lido, Puntal, Thaibonnet, and Galatxo
France: Cigalon, Couachi, and O.B.P.C.
Russia: Uzyupyg and Aucuam
Italy: Balilla, Carnaroli and Ariete
Uruguay: INIA Tacuari, L1130, El Paso 144 and INIA Caraguata
Hungary: Sandora, Risabell, and M-225
Brazil: Bigua, Bonanca, Jaburu, and Talento

(listed in the order of plots planted)

Japan: Koshihikari, Nipponbare, and Nakate-shinsenbon

4. Seeds were sown in seedling boxes on April 23, and a single seedling per hill was transplanted on May 21 in the lowland field of NICS, Tsukuba (36.00 N, 139.59 E). Two repetitions of each variety were planted; each repetition consisting in a 2-row plot with spacing of 20 cm x 15 cm between the rows and 30 cm between each repetition (“namiki-ue” pattern). Compound fertilizer (N:P₂O₅:K₂O = 15:15:15) was applied before transplanting at the rate of 80 kg N per ha.

5. The weather in summer was considered unfavorable for evaluating flowering response in 2003. The monthly mean temperatures from May to September were 17.3, 21.6, 21.2, 24.3 and 22.2°C and were much lower than in average years. This low temperature caused delayed flowering of almost one week, especially for early varieties.

Results

6. Plant type and appearance of varieties were recorded in photographs on September 11. Most of the asterisked characteristics of TG/16/8(proj.3) were examined on September 25. At this time, very early varieties such as those from Russia and Hungary were already over-matured, and two varieties from Brazil were still at a vegetative stage. As the data were recorded by a single observer, without double checking, the results may not indicate the exact expression of the characteristics, and it is feared that direct comparison of data between contributor countries and Japan is not appropriate for some characteristics.

7. The attached tables contain only data of varieties and characteristics available from both sources: the notes submitted by the contributor country is indicated as “National description”, and notes taken in Tsukuba, are indicated as “Japan” in the line below (in bold type) for each characteristic.

8. Further observations:

a) Heading: Among varieties with note 3, those from France and Hungary flowered in late July, those from Spain flowered in early August, and one from Japan in mid August, while INIA Tacu from Uruguay was much later than even those of note 7 of the same country.

b) Stem length: This is considered to be related to the heading. Those from Hungary became shorter in Japan, but those from Uruguay and Brazil became much taller. The reason for the latter is to be investigated.

c) Panicle length: Varieties from Spain, France and Hungary tended to be shorter, perhaps due to accelerated vegetative growth, but those from Uruguay and lowland rice (Bigua and Jaburu) of Brazil became longer even though growth duration did not change much.

d) Leaf blade attitude: The higher notes for Hungarian varieties might be due to the timing of evaluation – over-maturing. However, the reason for those from Uruguay is not yet known.

e) Hairs on lemma: Observations were conducted without a magnifier. Three Japanese varieties were noted as 3, and others except one each from France and Hungary were rated as 1, even though many of them manifest hairiness of 5 or 7 in each country. The reason for this large difference is to be further investigated to establish whether it is due to inappropriate observation or due to environmental factors.

f) Distribution of awns: Results were consistent for European varieties, but varieties from South American countries had, in general a much reduced expression of awns in Japan. Considering that this characteristics seems to be influenced by the balance between plant growth and climate/soil fertility, further testing will be needed.

[Annex follows]

Notes for the table in the Annex:

The following table presents the description according to the information provided by the contributors on the basis of document TG/16/4. Where the information was provided on the basis of document TG/16/8(proj.3) for characteristics not covered by the previous version of the Test Guidelines for Rice (TG/16/4) the rows are shaded.

ANNEX

Country of description		Uruguay				Brazil				Japan		
Variety denomination		INIA Tacu*	L1130	El Paso 144	INIA Cara*	Bigua	Jaburu	Bonanca	Talento	Koshihikari	Nipponbare	Naka-shin*
4. Penultimate leaf: anthocyanin coloration of auricles	National description	1	1	1	1	1	1	1	1			
	Japan	1	1	1	1	1	1	1	1	1	1	1
5. Flag leaf: curvature of blade	National description	3	1	1	1	1	1	1	1	5	1	1
	Japan	3	3	1	5	1	1	1	1	1	1	1
15. (*) Flag leaf: attitude of blade (early observation)	Japan											
16. (*) Flag leaf: attitude of blade (late observation)	Japan	4	4	1	5					3	2	2
6. Time of heading (50% of plants with heads)	National description	3	7	7	7	101 days	99 days	82 days	86 days	3	7	8
	Japan	Aug. 24	Aug.19	Aug. 19	Aug. 20	Sept. 7	Sept. 12	Aug. 14	Aug. 20	Aug. 12	Aug. 23	Aug. 24
9. Lemma: anthocyanin coloration of apex	National description	1	1	1	3	1	1	1	6	1	1	1
	Japan	1	7	1	1	1	1	1	9	1	1	1
10. Spikelet: color of stigma	National description	1	1	1	1	1	1	1	1			
	Japan	1	1	4	1	1	1	1	1	1	1	1
12. Stem: length (excluding panicle; excluding floating rice)	National description	3	3	3	3	3	3	5	3	6	4	4
	Japan	6	6	5	9	8	7	6	4	6	5	5
13. Stem: anthocyanin coloration of nodes	National description	1	1	1	1	1	1	1	1			
	Japan	1	1	1	1	1	1	1	1	1	1	1
14. Panicle: length	National description	5	7	5	5	5	5	5	3	4	5	4
	Japan	5	5	7	6	8	8	5	3	5	5	4
15. Panicle: curvature of main axis	National description	7	7	3	3							
	Japan	5	7	6	5	5	5	5	5	5	5	5
16. Spikelet: hairs on lemma	National description	1	1	7	1	7	5	1	1			
	Japan	1	1	1	1	1	1	1	1	3	3	3
20. Panicle: distribution of awns (90)	National description	3	5	5	5	4	2	5	1			
	Japan	1	1	3	1	1	1	1	1	3	3	1
34. (*) Panicle: distribution of awns (70-80)	Japan											
	National description					3	3	3	3	2	2	
42. (*) Panicle: attitude of branches (90)	Japan	5	5	3	3	1	1	3	3	3	3	3

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Country of description		Spain				France		Hungary		
Variety denomination		Lido	Puntal	Thaibonnet	Galatxo	Cigalon	Couachi	Sandora	Risabell	M-225
4. Penultimate leaf: anthocyanin coloration of auricles	National description	1	1	1	1	1	1	1	1	1
	Japan	1	1	1	1	1	9?	1	1	1
5. Flag leaf: curvature of blade	National description	3	3	3	3	3	1	3	1	3
15. (*) Flag leaf: attitude of blade (early observation)	Japan	3	3	3	3	1	1	5	5	5
16. (*) Flag leaf: attitude of blade (late observation)	Japan	3	3	4	3	3	1	5	5	5
6. Time of heading (50% of plants with heads)	National description	Aug.8 (3)	Aug.16(7)	Aug.12 (5)	Aug.8 (3)	3	9	3	3	3
	Japan	Aug.5	Aug.15	Aug. 13	Aug.4	Jul. 26	Aug. 20	Jul. 24	Jul. 27	Jul. 17
9. Lemma: anthocyanin coloration of apex	National description	1	1	1	1	1	1	1	1	1
	Japan	1	9	5	1	1	5	3	1	1
10. Spikelet: color of stigma	National description	1	4	4	1	1	2	1	1	1
	Japan	1	5	5	1	1	5	1	1	1
12. Stem: length (excluding panicle; excluding floating rice)	National description	6	5	4	3	3	1	7	9	4
	Japan	6	5	5	3	3	3	5	5	3
13. Stem: anthocyanin coloration of nodes	National description	1	1	1	1	1	1	1	1	1
	Japan	1	1	1	1	1	1	1	1	1
14. Panicle: length	National description	3	7	6	5	3	5	6	7	3
	Japan	3	5	6	3	2	6	3	5	2
15. Panicle: curvature of main axis	National description	3	5	5	7	3	5	5	5	3
	Japan	3	5	5	7	3	5	3	5	5
16. Spikelet: hairs on lemma	National description	4	1	1	5	5	5	5	5	5
	Japan	1	1	1	1	3	1	1	1	3
20. Panicle: distribution of awns (90)	National description	1	1	1	1			1	1	1
	34. (*) Panicle: distribution of awns (70-80)	Japan	1	1	1	1	1	1	1	1
42. (*) Panicle: attitude of branches (90)	National description	1	4	5	5	3	5			
	Japan	1	3	1	5	3	1	3	3	1

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