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DEVELOPMENT OF A REGIONAL SET OF EXAMPLE VARIETIES FOR THE TEST GUIDELINES FOR RICE

Document prepared by experts from Japan

1. At its thirty-second session, held in Tsukuba, Japan, from September 8 to 12, 2003, the Technical Working Party for Agricultural Crops (TWA) agreed that the Test Guidelines for Rice should be submitted to the Technical Committee for adoption on the basis of a minimal set of example varieties which had been verified by the leading expert and on the basis that regional sets of example varieties would be incorporated as these became available. The Test Guidelines for Rice (document TG/16/8) were adopted by the TC on that basis.

2. Experts from China, Japan and the Republic of Korea agreed to develop a regional set of example varieties for East Asia. The purpose of this document is to report on the latest developments.

3. In 2004, Japan and the Republic of Korea exchanged seed of 10 potential example varieties (candidate example varieties) of rice and started growing trials for that set of candidate example varieties. Those lists of candidate example varieties are contained in Table 1.

4. On March 29, 2005, Japan and the Republic of Korea discussed the data obtained from the growing trial in 2004 and identified potential example varieties as a basis for a regional set of example varieties for East Asia.

5. In 2005, the Republic of Korea repeated the growing trial, using the 20 combined candidate example varieties of Japan and the Republic of Korea.

6. In 2006, China, Japan and the Republic of Korea exchanged seed of candidate example varieties of each country and planted a growing trial in each country. The lists of candidate example varieties are contained in Table 1.

7. In China, the growing trial was started at three sites, Hangzhou, Guangzhou and Gongzhuling, branches of the DUS Testing Center for Protection of New Varieties of Plants of the Ministry of Agriculture, which represented three main rice production regions in China. Seeds were soaked in water for 24 hours and then incubated for 48 hours before they were placed on the seedbed. Single seedlings per hill were transplanted 20~50 days after the seed was sown. Three plots of each variety were planted in the form of 3-row plots, with spacing of 20 cm × 20 cm between the rows. In Hangzhou Branch, Hangzhou (latitude 30° N, longitude 119° E), the growing trial was divided into an early and a medium-late crop season. In the early crop season, seeds were sown on April 15, and single seedlings per hill were transplanted on May 20. In the medium-late crop season, seeds were sown on May 25, and transplanted on June 20. In Gongzhuling Branch, Gongzhuling, (latitude 43° N, longitude 124° E), seeds were sown on April 8, and single seedlings per hill were transplanted on May 22. In Guangzhou Branch, Guangzhou, (latitude 23° N, longitude 113° E), seeds were sown on July 12, and single seedlings per hill were transplanted on August 1. In total, 31 characteristics were observed according to the UPOV Test Guidelines for Rice (document TG/16/8) in three trial sites.

8. In the Republic of Korea, seeds were sown in seedling boxes on April 25 and single seedlings per hill were transplanted on May 25 in a lowland field at the Variety Testing Division of the National Seed Management Office (NSMO), Suwon (latitude 37° N, longitude 127° E). Three plots of each variety were planted in the form of 2-row plots with spacing of 30 cm x 15 cm between the rows. Compound fertilizer ($N:P_2O_5:K_2O$ = 16:3:3) per 10a was applied before transplanting. All characteristics were observed according to the UPOV Test Guidelines for Rice (document TG/16/8).

9. In Japan, seeds were sown in seedling boxes on April 26, and single seedlings per hill were transplanted on May 29 in a lowland field at the National Institute of Crop Science (NICS), Tsukuba (latitude 36° N, longitude 140° E). One plot of each variety was planted in the form of 2-row plots with spacing of 30 cm x 15 cm between the rows. Compound fertilizer ($N:P_2O_5:K_2O$ = 14:14:14) was applied before transplanting at a rate of 80 kg N per ha. In total, 31 characteristics were observed based on the UPOV Test Guidelines for Rice (document TG/16/8).

10. In 2007, the data from the growing trial were exchanged between the three countries, and each country made a list of a regional set of example varieties for East Asia. The proposed set of example varieties for East Asia in presented in the annex to this document.

Table 1: Lists of candidate example varieties

	China[2]	Japan[1][2]	Republic of Korea[1][2]
Candidate example varieties	1. Guang Lu Ai 4 2. Lu Chuan Zao 1 3. Gui Hua huang 4. He Jiang 18 5. Zhu Jin Sui 6. Zhu Yun Nuo 7. Li Shui Nuo 8. Che Chon 9 9. Li-Jiang-Xin-Tuan-Hei-Gu	1. Asamurasaki 2. Yumetoiro 3. Koshihikari 4. Manyoumochi 5. Sariqueen 6. Hoshiyutaka 7. Kusahonami 8. Tsukushiakamochi 9. Beniroman 10. Nipponbare	1. Hwaseong 2. Dasan 3. Heugnam 4 . Odae 5. Daerip1 6. Ilpum 7. Heugjinju 8. Hwaseonchal 9. Hyangnam 10. Jinboul

[1] Varieties for which seed was exchanged in 2004 between Japan and the Republic of Korea.

[2] Varieties for which seed was exchanged in 2006 between China, Japan and the Republic of Korea.

[Annex follows]

ANNEX

Proposed Set of Example Varieties for East Asia

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.	**10 VS**	**Coleoptile: anthocyanin coloration**		
(+)				
QN		absent or very weak	Kosshihikari, Hwaseong, Gui Hua huang	1
		weak		3
		strong		5
2.		**Basal leaf: sheath color**		
PQ		green	Kosshihikari, Hwaseong, Gui Hua huang	1
		green with purple lines		2
		light purple		3
		purple		4
3.	**40 VG**	**Leaf: intensity of green color**		
QN (a)		light		3
		medium		5
		dark		7
4.	**40 VG**	**Leaf: anthocyanin coloration**		
QL (a)		absent	Kosshihikari, Hwaseong, Gui Hua huang	1
		present	Asamurasaki	9
5.	**40 VG**	**Leaf: distribution of anthocyanin coloration**		
PQ (a)		on tips only		
		on margins only		
		in blotches only		
		even		
6.	**40 VG**	**Leaf sheath: anthocyanin coloration**		
QL (a)		absent		1
		present		9

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
7.	**40 VG**	**Leaf sheath: intensity of anthocyanin coloration**		
QN (a)		very weak		1
		weak		3
		medium		5
		strong		7
8.	**40 VS**	**Leaf blade: pubescence of surface**		
QN (a)		absent or very weak	Kusahonami	1
		weak	Lu Chuan Zao 1	3
		medium		5
		strong		7
9. (*)	**40 VS**	**Leaf: anthocyanin coloration of auricles**		
QL (a)		absent		1
		present		9
10.	**40 VS**	**Leaf: anthocyanin coloration of collar**		
QL (a)		absent		1
		present		9
11.	**40 VS**	**Leaf: shape of ligule**		
(+)				
PQ (a)		truncate		1
		acute		2
		cleft		3

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
12.	**40 VS**	**Leaf: color of ligule**		
PQ(a)		colorless		1
		green		2
		green with purple lines		3
		light purple		4
		purple		5
13.	**40 MS**	**Leaf blade: length**		
QN (a)		short		3
		medium		5
		long		7
14.	**40 MS**	**Leaf blade: width**		
QN (a)		narrow		3
		medium		5
		broad		7
15. (*) (+)	**60 VG**	**Flag leaf: attitude of blade (early observation)**		
QN		erect	Tsukushiakamoch, Dasan	1
		semi-erect	Heuginju	3
		horizontal		5
		recurved		7
16. (*) (+)	**90 VG**	**Flag leaf: attitude of blade (late observation)**		
QN		erect		1
		semi-erect		3
		horizontal		5
		recurved		7

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
17.	**40 VS**	**Culm: habit**		
(+)				
PQ		erect		1
		semi-erect		3
		open		5
		spreading		7
		prostrate		9
18.	**40 VS**	**Prostrate varieties only: Culm: kneeing ability**		
(+)				
QL		absent		1
		present		9
19.	**55 VG**	**Time of heading (50% of plants with heads)**		
(*)				
QN		very early	Jinbuol, Zhu Jin Sui	1
		early	Asamurasaki, Odae	3
		medium	Yumetoiro, Dasan	5
		late		7
20.	**60 VS/MS**	**Male sterility**		
(+)				
PQ		absent		1
		partially male sterile		2
		male sterile		3

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. **(+)**	**65 VS**	**Lemma: anthocyanin coloration of keel (early observation)**		
QN		absent or very weak		1
		weak		3
		medium		5
		strong		7
22. **(+)**	**65 VS**	**Lemma: anthocyanin coloration of area below apex (early observation)**		
QN		absent or very weak		1
		weak		3
		medium		5
		strong		7
23, (*) **(+)**	**65 VS**	**Lemma: anthocyanin coloration of apex (early observation)**		
QN		absent or very weak	Kosshihikari, Hwaseong, Gui Hua huang	1
		weak		3
		medium		5
		strong		7
		very strong		9
24. **(*)**	**65 VS**	**Spikelet: color of stigma**		
PQ		white	Kosshihikari, Hwaseong, Gui Hua huang	1
		light green		2
		yellow		3
		light purple		4
		purple	Lu Chuan Zao 1	5

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
25.	**70 VS**	**Stem: thickness**		
(+)				
QN		thin		3
		medium		5
		thick		7
26.	**70 VS**	**Non-prostrate varieties only: Stem: length (excluding panicle)**		
(*)				
(+)				
QN		very short		1
		short		3
		medium	Kusahonami, Heuginju, Gui Hua huang	5
		long		7
		very long		9
27.	**70 VS**	**Stem: anthocyanin coloration of nodes**		
(*)				
QL		absent	Kosshihikari, Hwaseong, Gui Hua huang	1
		present		9
28.	**70 VS**	**Stem: intensity of anthocyanin coloration of nodes**		
QN		weak		3
		medium		5
		strong		7
29.	**70 VS**	**Stem: anthocyanin coloration of internodes**		
QL		absent		1
		present		9

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
30. (*) (+)	**72-90 MS**	**Panicle: length of main axis**		
QN		short		3
		medium	Beniroman, Odae, Guang Lu Ai 4	5
		long		7
31.	**70.MS**	**Panicle: number per plant**		
(+)				
QN		few		3
		medium		5
		many		7
32.	**60 VS**	**Panicle: awns**		
QL		absent		1
		present		9
33.	**60 VS**	**Panicle: color of awns (early observation)**		
PQ		light gold		1
		gold		2
		brown		3
		reddish brown		4
		light red		5
		red		6
		light purple		7
		purple		8
		black		9

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
34. (*)	**70-80 VS**	**Panicle: distribution of awns**		
PQ		tip only		1
		upper quarter only		2
		upper half only		3
		upper three quarters only		4
		whole length		5
35.	**70-80 MS**	**Panicle: length of longest awns**		
QN		very short		1
		short		3
		medium		5
		long		7
		very long		9
36. (*)	**60-80 VS**	**Spikelet: pubescence of lemma**		
QN		absent or very weak		1
		weak	Zhu Jin Sui	3
		medium	Hoshiyutaka	5
		strong		7
		very strong		9

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
37. **(+)**	**80-90 VS**	**Spikelet: color of tip of lemma**		
PQ		white		1
		yellowish		2
		brown		3
		red		4
		purple		5
		black		6
38.	**90 VS**	**Panicle: color of awns (late observation)**		
PQ		light gold		1
		gold		2
		brown		3
		reddish brown		4
		light red		5
		red		6
		light purple		7
		purple		8
		black		9
39. **(*)** **(+)**	**90 VS**	**Panicle: attitude in relation to stem**		
PQ		upright		1
		aemi-uplight		2
		slightly drooping	Jinbuol	3
		strongly drooping		4

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
40. **(+)**	**90 VS**	**Panicle: presence of secondary branching**		
QL		absent		1
		present		9
41. **(+)**	**90 VS**	**Panicle: type of secondary branching**		
PQ		Type 1		1
		Type 2		2
		Type 3		3
42. **(*)** **(+)**	**90 VS**	**Panicle: attitude of branches**		
QN		erect		1
		semi-erect	Kusahonami, Ilpum, Zhu Yun Nuo	3
		spreading		5
43. **(+)**	**90 VG**	**Panicle: exsertion**		
QN		enclosed		1
		partly exserted		3
		just exserted		5
		moderately-well exserted		7
		well exserted		9
44.	**90 VG**	**Time of maturity**		
QN		very early		1
		early		3
		intermediate		5
		late		7
		very late		9

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
45.	**92 VG**	**Leaf: time of senescence**		
(+)				
QN		early		3
		intermediate		5
		late		7
46.	**VS**	**Lemma: color**		
PQ		light gold	Kosshihikari, Hwaseong, Gui Hua huang	1
		gold	Lu Chuan Zao 1	2
		brown		3
		reddish to light purple		4
		purple		5
		black		6
47.	**VS**	**Lemma: ornamentation**		
PQ		absent	Kosshihikari, Hwaseong, Gui Hua huang	1
		gold furrows		2
		brown furrows		3
		purple spots		4
		purple furrows		5
48.	**92 VS**	**Lemma: anthocyanin coloration of keel (late observation)**		
(+)				
QN		absent or very weak		1
		weak		3
		medium		5
		strong		7

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
49. **(+)**	**92 VS**	**Lemma: anthocyanin coloration of area below apex (late observation)**		
QN		absent or very weak		1
		weak		3
		medium		5
		strong		7
		very strong		9
50. **(*)** **(+)**	**92 VS**	**Lemma: anthocyanin coloration of apex (late observation)**		
QN		absent or very weak	Kosshihikari, Hwaseong, Gui Hua huang	1
		weak		3
		medium		5
		strong		7
		very strong		9
51. **(*)** **(+)**	**92 MS**	**Glume: length**		
QN		short		3
		medium	Kosshihikari, Dasan, Gui Hua huang	5
		long		7
52. **(*)** **(+)**	**92 MS**	**Glume: color**		
PQ		straw	Kosshihikari, Hwaseong, Gui Hua huang	1
		gold		2
		red		3
		purple		4

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
53. **(+)**	**92 MS**	**Grain: weight of 1000 (fully developed grains)**		
QN		low		3
		medium	Dasan, Gui Hua huang	5
		high		7
54.	**92 MS**	**Grain: length**		
QN		short		3
		medium		5
		long		7
55.	**92 MS**	**Grain: width**		
QN		narrow		3
		medium		5
		broad		7
56. **(+)**	**92 VG**	**Lemma: phenol reaction**		
QL		absent	Koshihikari, Hwaseong, Gui Hua huang	1
		present	Yumetoiro, Dasan, Guang Lu Ai 4	9
57. **(+)**	**92 VS**	**Lemma: intensity of phenol reaction**		
QN		light		3
		medium		5
		dark		7
58. **(*)**	**92 MS**	**Decorticated grain: length**		
QN		short	Tsukushiakamochi, Hwaseong	3
		medium	Yumetoiro, Heuginju, Che Chon 9	5
		long		7

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
59.	**92 MS**	**Decorticated grain: width**		
QN		narrow		3
		medium	Koshihikari, Hwaseong, Gui Hua huang	5
		broad	Daerip 1	7
60. (*) (+)	**92 VS**	**Decorticated grain: shape (in lateral view)**		
PQ		round		1
		semi-round	Asamurasaki, Ilpum	2
		half spindle-shaped		3
		spindle-shaped		4
		long spindle-shaped	Sariqueen	5
61. (*)	**92 VS**	**Decorticated grain: color**		
PQ		white	Manyoumochi, Hwaseonchal, Zhu Yun Nuo	1
		light brown	Koshihikari, Hwaseong, Gui Hua huang	2
		variegated brown		3
		dark brown		4
		light red		5
		red		6
		variegated purple		7
		purple		8
		dark purple/black	Heuginju	9
62.	**92 VS**	**Endosperm: type**		
(+)				
PQ		glutinous		1
		intermediate		2
		non-glutinous		3

		English	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
63.	**92 MG**	**Endosperm: content of amylose**		
(+)				
PQ		State 1		1
		State 2		2
		State 3		3
		State 4		4
		State 5		5
		State 6		6
		State 7		7
64.	**92 MG**	**Alkali digestion**		
(+)				
QN		not digested		1
		low digested		3
		intermediate		5
		completely digested		7
65. **(*)**	**92 MG**	**Decorticated grain: aroma**		
QN		absent or very weak	Koshihikari, Hwaseong, Gui Hua huang	1
		weak	Sariqueen	2
		strong		3

[End of Annex and of document]