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# INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

# TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS

## Thirty-First Session
## Rio de Janeiro, Brazil, September 23 to 27, 2002

COMMENTS ON TEST GUIDELINES FOR RICE

*Document prepared by the Office of the Union with comments made at the Asian Regional Meeting 2002, and by experts from Japan, Spain and the International Rice Research Institute (IRRI)*

PROPOSED AMENDMENTS TO TG/16/7(PROJ.) TEST GUIDELINES FOR RICE

I. Proposed amendments developed in the Third Asian Regional Technical Meeting for Plant Variety Protection, Seoul, July 2 to 5, 2002

VII. Table of Characteristics

It was proposed that separate sets of example varieties should be provided for the European, South East Asia (including Southern China) and Northern Asia regions.

Char. 1 Coleoptile color: to have the states colorless (1); green (2); purple (3)
To be checked if this characteristic is linked to Char.2

Char. 9 Leaf auricles: IRRI to check if all *Oryza sativa* L. varieties are state "present"

Char. 11 Leaf collar: IRRI to check if these characteristics discriminate between existing varieties

Char. 12 Leaf: anthocyanin coloration of collar. IRRI to check if these characteristics discriminate between existing varieties

Char. 13 Leaf ligule. IRRI to check if all *Oryza sativa* L. varieties are state "present"

Char. 15 Leaf: color of ligule. To insert new state (1) " colorless"

Char. 20 To be renamed Culm: Kneeing ability (for floating rice only), with states: absent (1); present (2)

Char. 21 Culm: attitude. Spreading to become state (9) and new state "semi-open" inserted as state (7)

Char. 23 Male sterility. China to provide 3 states for this characteristic and also the method for examining and example varieties.

Char. 24-26 Leading expert to check if these characteristics should also be examined at a later stage of development to provide further useful discrimination of varieties

Char. 35 Panicle: number per plant. Republic of Korea to provide explanation

Char. 36 Panicle: color of awns (early observation). Leading expert requested example varieties.

Char. 37 Panicle: color of awns (late observation). Leading expert requested example varieties.

Char. 40 Panicle: awns. To be recorded at growth stage 60 and moved before characteristic 36.

Char. 41 Panicle: length of longest awns. To be recorded at growth stage 70-80 and moved to the correct place in the Test Guidelines.

Char. 42 Panicle: distribution of awns. To be recorded at growth stage 70-80 and moved to the correct place in the Test Guidelines.

Char. 44 To be amended to read: Panicle: type of secondary branching

Char. 45 Panicle: attitude of branches. Terms "erect.. spreading" to be checked

Char. 46 Panicle: exsertion. To read: well exserted (1); moderate-well exserted (3); exserted (5); partly exserted (7); enclosed (9) for consistency with IRRI descriptors.

Char. 47 Time of maturity. To check if state (5) should be medium or intermediate. To delete example variety "Bahia" from state (5) or state (7).

Char. 48 Leaf senescence. To check if state (5) should be medium or intermediate.

Char. 59 Decorticated grain: color. State (9) to read "dark purple / black". Leading expert requested example varieties.

Char. 60 Endosperm: presence of amylose. Example varieties for states (1) and (2) to be swapped.

Char. 61 Endosperm: content of amylose. Japan to review the states of expression and provide example varieties

Char. 62 To read: Varieties with endosperm amylose absent only: Decorticated grain: white core, with states: less than 5% (1); 5-10% (3); 11-20% (5); 21-40% (7); over 40% (9). Republic of Korea to provide illustration.

New char Varieties with endosperm amylose absent only: Decorticated grain: white belly. To read: less than 5% (1); 5-10% (3); 11-20% (5); 21-40% (7); over 40% (9). Republic of Korea to provide illustration.

Char. 63 Gelatinization temperature. Japan to provide explanation

Char. 64 Decorticated grain: aroma. Spain to provide explanation.

VIII. Explanations of the Table of Characteristics

Ad. 43 /44 Legend for drawings to be corrected regarding states of expression

IX. Literature

Japan to advise correct reference

*General*

The Office of the Union explained that any further comments or proposals received in writing before the end of July 2002 would be presented for discussion by the Technical Working Party for Agricultural Crops at its thirty- first session to be held in September 2002.

II. Proposed Amendments by Mr. Jun Koide from Japan

I am sending the first portion of comments to TG/16/7(proj.). This is because I found that the result of discussion of last year in Mexico City was not included in the draft of rice test guideline dated 2002-01-31. I realized this recently when I noticed characteristic "alkali digestion" was not in the table, and compared my record of discussion in Mexico with the newest version of the draft.

The items which did not reflect the results of discussion:
Char. 14 Leaf: shape of ligule --- 'split' was corrected as 'cleft' *
Char. 18 and 19 Flag leaf. Attitude of blade --- 'reflexed' was corrected as 'recurved' *
Char. 44 Panicle: type of secondary branching --- 'clustered' was changed to 'clustering' * (* also in Explanations)
Char. 58 Decorticated grain: shape (in lateral view) --- shape was changed to length/width ratio, without further description and Notes
Char. 63 Gelatinization temperature --- changed to ' Alkali digestion'

Comments from Dr. Kaneda, Japan

Characteristics **37. Panicle: color of awns（late observation）**

As requested by leading expert, we tentatively name example varieties of Japan as follows:

| | | |
|---|---|---|
| 1: | yellowish white | Nipponbare, Hitomebore |
| 2: | yellowish brown | Kitanomurasaki |
| 3: | brown | Tatsukomochi |
| 4: | reddish brown | Beniroman |
| 5: | light red | --- |
| 6: | red | --- |
| 7: | light purple | Manyoumochi |
| 8: | purple | Asamurasaki |
| 9: | black | --- |

Characteristics 59. Decorticated grain: color

As requested by leading expert, we tentatively name example varieties of Japan as follows.

| | | |
|---|---|---|
| 1: | white | Mochiminori |
| 2: | light brown | Koshihikari |
| 3: | variegated brown | --- |
| 4: | dark brown | --- |
| 5: | light red | --- |
| 6: | red | Tsukushiakamochi |
| 7: | variegated purple | --- |
| 8: | purple | --- |
| 9: | dark purple/black | Asamurasaki |

Characteristics 60. Endosperm: type（renamed, instead of presence of amylose）

| | | |
|---|---|---|
| 1: | glutinous | Akanemochi |
| 2: | intermediate | Milky Queen |
| 3: | non-glutinous | Koshihikari |

Explanation: As it is difficult to define that amylose is completely absent in glutinous endosperm, and the methods of determining amylose content may not be quite suitable for DUS tests, 'presence of amylose' was changed to 'type'. The three categories can be simply defined by reaction to KI-I solution; glutinous type endosperm is stained to reddish purple, non-glutinous type to dark blue purple, and intermediate type to reddish - blue purple. Intermediate rice is non-glutinous but with very low amaylose, the type which is recently commanding reputation among consumers in East Asian countries. KI-I solution is prepared by mixing 0.1 % $I_2$ solution and 0.2 % KI solution.

Characteristics 61. Endosperm: content of amylose
1: less than 5 %
2: 5-10 %
3: 11-15 %
4: 16-20 %
5: 21-25 %
6: 26-30 %
7: more than 30 %

Explanation: Modified from IRRI system by rounding due to variability of data especially in cool climates, and adding a rank of very high amylose content considering rice in some area of southern India. Further discussion may be needed for alternative definition, not using percentage of amylose, but just describing as very low, low, intermediate, high and very high.

Characteristics 62. Varieties with non-glutinous endosperm only (Revised)
Decorticated (revised from Polished) grain: expression of white core

Explanation: Ranking in the Draft Rice Test Guideline would be all right. However, the percentage of grains with white core is not always parallel to the size of white core, and another definition might be necessary.

Characteristics 63. Alkali digestion (Revised from Gelatinization temperature)
1: not digested
3: lowly digested
5: intermediate
7: completely digested

Explanation: Alkali digestion is much easier to test and simpler to observe, and is parallel to results of testing gelatinization temperature. Notes 1.0-2.5 corresponds to gel. temp. of 74.5-80 $^{o}$C, notes 3.5-5.4 to 70-74 $^{o}$C, and notes 5.5-7 to 55-59 $^{o}$C (Juliano and Villareal: Grain Quality Evaluation of World Rices, IRRI, 1993)

IX. Literature

T. Matsuo (edi) (1993-97): "Science of the Rice Plant (volume 1-3)" Nosan Gyoson Bunka Kyokai (Nobunkyo) ,Tokyo, Japan

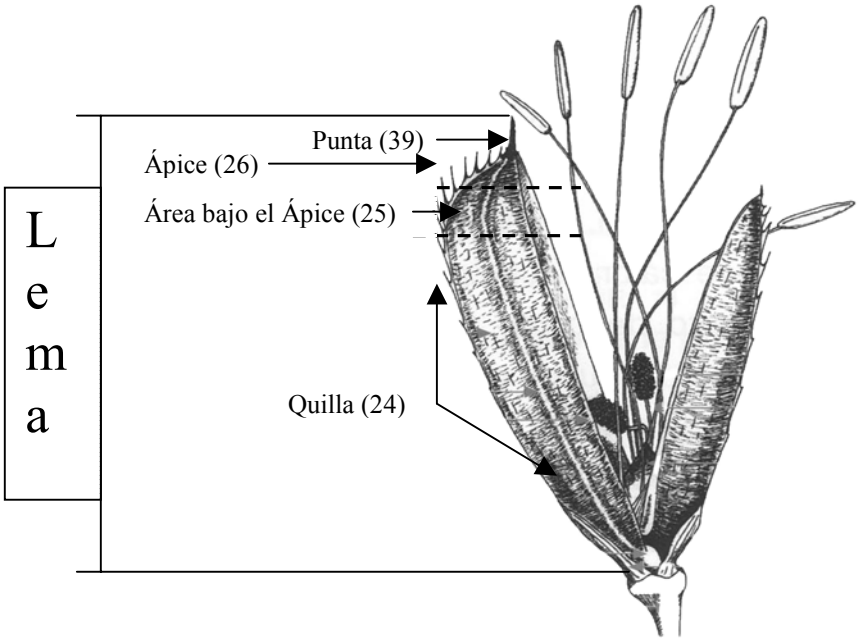
Vol.1 Morphology (1993)
Vol.2 Physiology (1995)
Vol.3 Genetics (1997)
Indices (1997)

III. Comments from Spain

INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGARIA Y ALIMENTARIA (INIA)
SUBDIRECCIÓN GENERAL DE INVESTIGACIÓN Y TECNOLOGÍA
CENTRO DE ENSAYOS DE SEVILLA

ESPIGUILLA DE ARROZ

Localización de la zona en la que se debe tomar los caracteres 24, 25, 26 y 39.




Carácter 46. Exerción de la panícula.

Para una mejor compresión estamos realizando fotos con los distintos niveles, las enviaremos al comienzo de la próxima semana,

Carácter 64. Aroma

El principal componente que interviene en el aroma del arroz es la 2-acetil-1-pirrolina, para volatilizarla se añade 10 ml de KOH al 1,7% a 2 gramos de arroz descascarado, liberando el aroma, parecido al de las palomitas de maíz, antes de 10 minutos.
El nivel se asigna comparando las intensidades de aroma con variedades testigos.

IV. Comments by Mr. Edwin L. Javier from the International Rice Research Institute (IRRI)

1) Characteristic 9 - Leaf auricles
Most O. sativa varieties have auricles. The IRRI Genebank has 51 accessions without auricles.

2) Characteristic 11 - Leaf collar
Most O. sativa varieties have leaf collar. The IRRI Genebank has only 5 accessions without leaf collar.

3) Characteristic 12 - Leaf: anthocyanin coloration of collar
IRRI differentiates accessions according to collar color. The collar color distribution of the collection is: whitish = 72,453 accessions; purple = 2,445; purple line = 2,848.

4) Characteristic 13 - Leaf ligule
Most O. sativa varieties have leaf ligules. The IRRI Genebank has only 5 accessions without leaf ligule.

5) Characteristic 24-26
We can examine these characteristics at two stages of development.

6) Characteristic 36- 37 Panicle: color of awns (early and late observations) IRRI examines color of awns at one time only; that is at reproductive stage. It is a good point to examine this characteristic at early and late reproductive stage. We have noticed changes in awn color as plants mature. FYI, awn color distribution of the collection is as follows: Straw - 9,745; Gold - 674; Brown (tawny) - 240; Red - 917; Purple - 3,441; Black - 31. More than 62,000 accessions are awnless.

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