



TWV/49/23

ORIGINAL: English

DATE: May 18, 2015

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

TECHNICAL WORKING PARTY FOR VEGETABLES

PARTIAL REVISION OF THE TEST GUIDELINES FOR BRASSICAS

Document prepared by an expert from the Netherlands

Disclaimer: this document does not represent UPOV policies or guidance

1. The purpose of this document is to present a proposal for the partial revision of characteristics for “Male sterility” in the following Test Guidelines:

- Cauliflower (*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *botrytis* L.) (document TG/45/7)
- Cabbage (*Brassica oleracea* L.: *Brassica* (White Cabbage Group); *Brassica* (Savoy Cabbage Group); *Brassica* (Red Cabbage Group)) (document TG/48/7)
- Brussels Sprout (*Brassica oleracea* L. var. *gemmifera* DC.) (document TG/54/7)
- Kohlrabi (*Brassica oleracea* L. convar. *acephala* (DC.) Alef. var. *gongylodes* L.; *Brassica oleracea* L. *Gongylodes* Group) (document TG/65/4)
- Curly Kale (*Brassica oleracea* L. var. *sabellica* L.) (document TG/90/6 Corr.)
- Calabrese, Sprouting Broccoli (*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *cymosa* Duch. (including *Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *italica*) (document TG/151/4)

BACKGROUND

2. The TWV, at its forty-seventh session, held in Nagasaki, Japan, from May 20 to 24, 2013, agreed on a partial revision of male sterility of the following *Brassica* species (see document TWV/47/34 “Report”, Annex VI):

- Cauliflower (*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *botrytis* L.) (document TG/45/7)
- Cabbage (*Brassica oleracea* L.) (document TG/48/7)
- Brussels Sprout (*Brassica oleracea* L. var. *gemmifera* DC.) (document TG/54/7)
- Kohlrabi (*Brassica oleracea* L. convar. *acephala* (DC.) Alef. var. *gongylodes* L.; *Brassica oleracea* L. *Gongylodes* Group) (document TG/65/4)
- Swede-Rutabaga (*Brassica napus* L. var. *napobrassica* (L.) Rchb.) (document TG/89/6 Rev.)
- Curly Kale (*Brassica oleracea* L. var. *sabellica* L.) (document TG/90/6 Corr.)
- Chinese Cabbage (*Brassica rapa* L. var. *pekinensis* (Lour.) Kitam.) (document TG/105/4)

- Calabrese, Sprouting Broccoli (*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *cymosa* Duch. (including *Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *italica*) (document TG/151/4)

3. The TWV, at its forty-eighth session, held in Paestum, Italy, from June 23 to 27, 2014, considered document TWV/48/31 “Partial Revision of the Test Guidelines for Brassicas”, which presented the proposed revision of male sterility of the above mentioned Test Guidelines, except for the two documents below, for which the Leading Expert’s advice was not to include them in the partial revision:

- Swede-Rutabaga (*Brassica napus* L. var. *napobrassica* (L.) Rchb.) (document TG/89/6 Rev.)
- Chinese Cabbage (*Brassica rapa* L. var. *pekinensis* (Lour.) Kitam.) (document TG/105/4)

4. The TWV agreed with the proposed revisions, subject to the addition of a note to all explanations on the availability of the method to test male sterility, following the example of the Test Guidelines for Tomato (document TG/44/11 Rev.), Ad. 61.:

“Note: Patents pending on part of the method: [xxx] and [xxx] and equivalents. Use solely for DUS purposes and for the development of variety descriptions by UPOV and authorities of UPOV members, courtesy to [xxx].”

(see document TWV/48/43 “Report”, paragraph 92)

5. On the above basis, the TWV agreed that the partial revision of the Test Guidelines for Brassicas be submitted to the Technical Committee (TC) for adoption at its fifty-first session, held in Geneva, from March 23 to 25, 2015 (see document TWV/48/43 “Report”, Annex IV).

6. At the proposal of the Leading Expert, Mrs. Amanda van Dijk (Netherlands), after consultation with Mr. Kees van Ettehoven (Netherlands) and Mrs. Swenja Tams (Germany), as joint *ad hoc* chairpersons for the forty-eighth session of the TWV, the draft Test Guidelines for partial revision for Brassica (partial revision: male sterility) will be rediscussed by the TWV at its forty-ninth session to be held in Angers, France, from June 15 to 19, 2015, in order to resolve technical issues (see UPOV Circular E-14/210 of September 1, 2014).

7. The Enlarged Editorial Committee (TC-EDC), at its meeting in March 2015, considered the following new proposed wording for the availability of the method to test male sterility, which was also approved by Syngenta:

“The description of the method to test male sterility [for Brassica] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.”

PROPOSAL

8. Annex I to this document contains the proposals presented to the TWV in document TWV/48/31, at its forty-eighth session, held in Paestum, Italy, from June 23 to 27, 2014, incorporating the new proposed wording for the availability of the method to test male sterility, as presented in paragraph 3 of this document. The Leading Expert also proposes to change the method of observation in the new characteristic 24 “Male sterility” in the Test Guidelines for Kohlrabi (document TG/65/4), as presented in Annex I, page 4, of this document. The proposed changes are presented below in highlight and underline (insertion) and ~~strikthrough~~ (deletion).

9. Annex II to this document contains additional proposed changes to those presented to the TWV at its forty-eighth session. The proposed changes are presented below in highlight and underline (insertion) and ~~strikthrough~~ (deletion).

[Annex I follows]

ANNEX I

Proposal to Revise the Explanation of Characteristic 28 “Male sterility” of the Test Guidelines for Cauliflower (*Brassica oleracea* L. convar *botrytis* (L.) Alef. var. *botrytis* L.) (document TG/45/7)

Current wording:

Ad 28: Male sterility

| | | |
|---------|---|--|
| Absent | = | >70% fertile plants (open-pollinated varieties or hybrid varieties produced with self-incompatibility systems) |
| Partial | = | 30% to 70% fertile plants (heterozygotic genetic sterility) |
| Total | = | <30% fertile plants (sterile cytoplasm) |

Proposed new wording:

Ad 28: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

| | | |
|---------|---|--|
| Absent | = | >70% fertile plants (open-pollinated varieties or hybrid varieties produced with self-incompatibility systems) |
| Partial | = | 30% to 70% fertile plants (heterozygotic genetic sterility) |
| Total | = | <30% fertile plants (sterile cytoplasm) |

PCR and/or field trial:

All applications declared total male sterile (state 3) on the TQ can be tested in a PCR trial¹. If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism), partial sterile or fertile. All applications declared fertile or partial male sterile are to be tested in a field trial. ~~The method and information on the availability of the marker for the PCR test can be obtained via Naktuinbouw (The Netherlands).~~

¹ The description of the method to test male sterility for *Brassica* (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.

Proposal to Revise the Explanation of Characteristic 35 “Male sterility” of the Test Guidelines for Cabbage (*Brassica oleracea* L.: *Brassica* (White Cabbage Group); *Brassica* (Savoy Cabbage Group); *Brassica* (Red Cabbage Group)) (document TG/48/7)

Current wording:

Ad 35: Male sterility

Check presence of pollen on stamen:

- (a) if pollen on stamen is present than male sterility is absent;
- (b) if pollen on stamen is absent than male sterility is present.

Proposed new wording:

Ad 35: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.

PCR and/or field trial:

All applications declared male sterile on the TQ can be tested in a PCR trial². If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism) or fertile. All applications declared fertile are to be tested in a field trial. ~~The method and information on the availability of the marker for the PCR test can be obtained via Naktuinbouw (The Netherlands).~~

² ~~The description of the method to test male sterility [for Brassica] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.~~

Proposal to Revise the Explanation of Characteristic 21 “Male sterility” of the Test Guidelines for Brussels Sprout (*Brassica oleracea* L. var. *gemmifera* DC.) (document TG/54/7)

Current wording:

Ad 21: Male sterility

Male sterile varieties have flowers with partially developed stamens; the filament is present but not the anther (pollen sack).

Proposed new wording:

Ad 21: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.

PCR and/or field trial:

All applications declared male sterile on the TQ can be tested in a PCR trial³. If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism) or fertile. All applications declared fertile are to be tested in a field trial. ~~The method and information on the availability of the marker for the PCR test can be obtained via Naktuinbouw (The Netherlands).~~

³ ~~The description of the method to test male sterility [for *Brassica*] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.~~

Proposal to Revise the Test Guidelines for Kohlrabi (*Brassica oleracea* L. convar. *acephala* (DC.) Alef. var. *gongylodes* L.; *Brassica oleracea* L. *Gongylodes* Group) (document TG/65/4)

The characteristic “Male sterility” is not included in the Test Guidelines for Kohlrabi (document TG/65/4). It is proposed to add this characteristic and an explanation to the Test Guidelines (like in Brussels sprouts, Cabbage and Calabrese):

| | English | français | deutsch | español | Example Varieties Exemples Beispielssorten Variedades ejemplo | Note/ Nota |
|---|-----------------------|-----------------------|-----------------------------|-------------------------|--|---------------|
| 24. VS (*) (+) | Male sterility | Stérilité mâle | Männliche Sterilität | Androesterilidad | | |
| QL | absent | absente | fehlend | ausente | Expreß Forcer, Lanro | 1 |
| | present | présente | vorhanden | presente | Erika, Morre, Oasis | 9 |

Ad 24: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.

PCR and/or field trial:

All applications declared male sterile on the TQ can be tested in a PCR trial⁴. If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism) or fertile. All applications declared fertile are to be tested in a field trial. ~~The method and information on the availability of the marker for the PCR test can be obtained via Naktuinbouw (The Netherlands).~~

⁴ The description of the method to test male sterility [for *Brassica*] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.

Proposal to add an Explanation to Characteristic 32 “Male sterility” of the Test Guidelines for Calabrese Sprouting Broccoli (*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var. *cymosa* Duch. including *Brassica oleracea* L. convar *botrytis* (L.) Alef. var. *italica*) (document TG/151/4)

Proposed wording for Ad. 32

Ad 32: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.

PCR and/or field trial:

All applications declared male sterile on the TQ can be tested in a PCR trial⁵. If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism) or fertile. All applications declared fertile are to be tested in a field trial. ~~The method and information on the availability of the marker for the PCR test can be obtained via Naktuinbouw (The Netherlands).~~

[Annex II follows]

⁵ The description of the method to test male sterility [for *Brassica*] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.

Proposal to Revise the Type of Observation of Characteristic 28 “Male sterility” of the Test Guidelines for Cauliflower (*Brassica oleracea* L. convar *botrytis* (L.) Alef. var. *botrytis* L.) (document TG/45/7)

It is proposed that the characteristic be indicated as MS instead of VG.

| | English | français | deutsch | español | Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo | Note/ Nota |
|---------------------------------|--|---------------------------|---------------------------------|-----------------------------|---|---------------|
| 28. VG (*) (+) | Male sterility MS | Stérilité mâle | Männliche Sterilität | Androesterilidad | | |
| QN | absent | absente | fehlend | ausente | Alpha 2, Flora Blanca | 1 |
| | partial | partielle | partiell | parcial | Dunvez, Odegwen | 2 |
| | total | totale | vollständig | total | Aviron, Bodilis | 3 |

Proposal to Revise the Type of Observation of Characteristic 35 “Male sterility” of the Test Guidelines for Cabbage (*Brassica oleracea* L.: *Brassica* (White Cabbage Group); *Brassica* (Savoy Cabbage Group); *Brassica* (Red Cabbage Group)) (document TG/48/7)

It is proposed that the characteristic be indicated as VG instead of VS.

| | English | français | deutsch | español | Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo | Note/ Nota |
|---------------------------------|--|---------------------------|---------------------------------|-----------------------------|---|---------------|
| 35. VS (*) (+) | Male sterility VG | Stérilité mâle | Männliche Sterilität | Androesterilidad | | |
| QL | absent | absente | fehlend | ausente | Winnigstadt (W); Pluton (R); Belvoy (S) | 1 |
| | present | présente | vorhanden | presente | Unifor (W); Roderick (R); Emerald (S) | 9 |

Proposal to Revise the Type of Observation of Characteristic 21 “Male sterility” of the Test Guidelines for Brussels Sprout (*Brassica oleracea* L. var. *gemmifera* DC.) (document TG/54/7)

It is proposed that the characteristic be indicated as VG instead of VS.

| | English | français | deutsch | español | Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo | Note/ Nota |
|---------------------------------|--|---------------------------|---------------------------------|-----------------------------|---|---------------|
| 21. VS (*) (+) | Male sterility VG | Stérilité mâle | Männliche Sterilität | Androesterilidad | | |
| QL | absent | absente | fehlend | ausente | Braveheart, Falstaff | 1 |
| | present | présente | vorhanden | presente | Abacus, Eclipsus | 9 |

Proposal to Revise the Test Guidelines for Curly Kale (*Brassica oleracea* L. var. *sabellica* L.) (document TG/90/6 Corr.)

The characteristic “Male sterility” is not included in the Test Guidelines for Curly Kale (document TG/90/6 Corr.). It is proposed to add this characteristic and an explanation to the Test Guidelines (like in Brussels sprouts, Cabbage and Calabrese):

| | English | français | deutsch | español | Example Varieties Exemples Beispielssorten Variedades ejemplo | Note/ Nota |
|------------|-----------------------|-----------------------|-----------------------------|-------------------------|--|---------------|
| 19. | VG | | | | | |
| | Male sterility | Stérilité mâle | Männliche Sterilität | Androesterilidad | | |
| | (+) | | | | | |
| | QL | | | | | |
| | <u>absent</u> | <u>absente</u> | <u>fehlend</u> | <u>ausente</u> | <u>Buffalo, Westlandse Herfst</u> | <u>1</u> |
| | <u>present</u> | <u>présente</u> | <u>vorhanden</u> | <u>presente</u> | <u>Winnetou</u> | <u>9</u> |

Ad 19: Male sterility

To be tested in a field trial and/or in a PCR trial.

Field trial:

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.

PCR and/or field trial:

All applications declared male sterile on the TQ can be tested in a PCR trial⁶. If the CMS marker appears to be not present, a field trial should be performed to observe whether the application is male sterile (on another mechanism) or fertile. All applications declared fertile are to be tested in a field trial.

[End of document]

⁶ The description of the method to test male sterility [for *Brassica*] (CMS marker) is covered by a trade secret. The owner of the trade secret, Syngenta Seeds B.V., has given its consent for the use of the CMS marker solely for the purposes of examination of Distinctness, Uniformity and Stability (DUS) and for the development of variety descriptions by UPOV and authorities of UPOV members. Syngenta Seeds B.V. declares that neither UPOV, nor authorities of UPOV members that use of the CMS marker for the above purposes will be held accountable for possible (mis)use of the CMS marker by third parties. Please contact Naktuinbouw, Netherlands, to obtain the method and information on the CMS marker for the purposes mentioned above.