UPOV

International Union for the Protection of New Varieties of Plants

E

Technical Working Party for Vegetables

TWV/53/14 Rev.

Fifty-Third Session
Seoul, Republic of Korea, May 20 to 24, 2019

Original: English
Date: August 30, 2019

REVISED REPORT

Adopted by the Technical Working Party for Vegetables (TWV)

Disclaimer: this document does not represent UPOV policies or guidance

Opening of the session

1. The Technical Working Party for Vegetables (TWV) held its fifty-third session in Seoul, Republic of Korea, from May 20 to 24, 2019. The list of participants is reproduced in Annex I to this report.

2. The session was opened by Ms. Romana Bravi (Italy), Chairperson of the TWV, who welcomed the participants and thanked the Republic of Korea for hosting the TWV session.

3. The TWV was welcomed by Mr. Choi Byungkook, General Director, International Development and Cooperation Division, Ministry of Agriculture, Food and Rural Affairs (MAFRA).

4. The TWV received a presentation on plant variety protection in the Republic of Korea by Mr. Pang Munjin, Director, Plant Variety Protection Division, Korea Seed and Variety Service (KSVS). A copy of the presentation is provided in Annex II to this report.

Adoption of the agenda

5. The TWV adopted the agenda as presented in document TWV/53/1 Rev.

Short Reports on Developments in Plant Variety Protection

(a) Reports on developments in plant variety protection from members and observers

6. The TWV noted the information on developments in plant variety protection from members and observers, provided in document TWV/53/3 Prov. The TWV noted that reports submitted to the Office of the Union after May 14, 2019, would be included in the final version of document TWV/53/3.

(b) Reports on developments within UPOV

7. The TWV received a presentation by the Office of the Union on latest developments within UPOV, a copy of which is provided in document TWV/53/2.

TGP documents

8. The TWV considered document TWP/3/1 Rev. and TWV/53/4.

Matters for adoption by the Council in 2019

9. The TWV noted the revisions previously agreed by the TC to documents TGP/7, TGP/8, TGP/10, TGP/14 and TGP/15 that would be proposed for adoption by the Council at its fifty-third ordinary session, to

be held in Geneva on November 1, 2019, subject to approval by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019.

Possible future revisions of TGP documents

10. The TWV noted the invitation by the United Kingdom for interested experts to contact them if they wished to test the new software containing the improved method of calculation of COYU.

11. The TWV noted the invitation by the TWC for the expert from the United Kingdom to draft a replacement section for document TGP/8 on the method of calculation of COYU.

TGP/7: Development of Test Guidelines

Characteristics which only apply to certain varieties

12. The TWV considered document TWP/3/9.

13. The TWV considered the request to provide suitable examples of quantitative and pseudo-qualitative characteristic to demonstrate how the proposed approach might be used in a way that would not present risks for decisions on distinctness.

14. The TWV considered the request to provide suitable examples of unsuitable cases to demonstrate the risks for decisions on distinctness of excluding varieties from observation on the basis of a preceding quantitative or pseudo-qualitative characteristic.

15. The TWV agreed that when a structure was “absent or weak” on a plant part, the observation of further characteristics on that structure could be difficult. For example in the Test Guidelines for Lettuce (TG 13/11), characteristic 3: “Plant:degree of overlapping of upper part of leaves”, indicated as QN, with states (1) “absent or weak, (2) medium, (3) strong. However the TWV agreed that in combination with the table provided in Chapter 5.3 of the Test Guidelines it reduced the risks for decisions on distinctness, and therefore encouraged the use of such tables when needed.

16. The TWV agreed that the following pseudo-qualitative characteristic from the Test Guidelines for Leaf Chicory (TG/154/4) was a suitable example to demonstrate how the proposed approach might be used in a way that would not present risks for decisions on distinctness.

Characteristic 16: “Plant: head formation: absent (1); open (2); closed (3)
Characteristic 17: “Only for varieties with head formation…”

TGP/8: Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability

Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions

17. The TWV considered documents TWP/3/10 and TWV/53/12.

18. The TWV considered the summary of different approaches used by members of the Union to convert observations into notes for producing variety descriptions of measured characteristics, as set out in document TWP/3/10, Annex II.

19. The TWV noted the request by the TC for the experts from France, Germany, Japan and the United Kingdom to provide information on the circumstances in which their methods would be suitable, including the method of propagation of the variety and other factors that had been used in deciding to use the method.

20. The TWV noted the additional information provided in Japan, as reproduced in document TWV/53/12.

TGP/14: Glossary of Terms Used in UPOV Documents

Color names for the RHS Colour Chart

21. The TWV considered document TWP/3/11

22. The TWV considered the proposal for the revision of the list of UPOV Color Groups in document TGP/14 “Glossary of Terms used in UPOV Documents” on the basis of the color groups set out in document TWP/3/11,

Annex I. The TWV agreed with the TWO that the new list of UPOV Color Groups prepared on the basis of the Sixth Edition of the RHS Colour Chart should be proposed for inclusion in document TGP/14.

23. The TWV considered the proposal for the revision of document TGP/14, Section 2, Subsection 3: "Color", and Subsection 3: Annex: "Color names for the RHS Colour Chart", to reflect the introduction of the revised list of UPOV Color Groups. The TWV agreed with the TWO that document TGP/14 should be revised to reflect the introduction of the new list of UPOV Color Groups on the basis of the proposal set out in document TWP/3/11, Annex II.

24. The TWV noted that RHS colour charts were not commonly used in the vegetable sector (for DUS examination).

TGP/15: Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)

New example: Characteristic-specific marker with incomplete information on state of expression

25. The TWV considered document TWP/3/12.

26. The TWV noted that the TC had agreed that document TGP/15 should be amended to clarify that it was the responsibility of the authority to decide on the reliability of the link between the gene and the expression of the characteristic.

27. The TWV noted that the TC had agreed to include an explanation in document TGP/15 that it would be the responsibility of the respective TWP and the TC to assess whether the reliability of the link between the gene and the expression of the characteristic was satisfied in order to include a method in the Test Guidelines.

28. The TWV noted that the TC had agreed that a new example should be added to document TGP/15 to illustrate a situation where the characteristic-specific marker does not provide complete information on the state of expression of a characteristic.

29. The TWV agreed with the proposal for a new example be added to document TGP/15 to illustrate a situation where the characteristic-specific marker does not provide complete information on the state of expression of a characteristic, as set out in the Annex to document TWP/3/12.

30. The TWV agreed that a new sentence should be added to TGP/15 in the case where a variety is claimed by the applicant to be resistant in the TQ but the marker test is negative, a bio-assay should be conducted/performed and be conclusive.

New proposals for revisions of TGP documents

TGP/7: Development of Test Guidelines

Procedure for partial revision of UPOV Test Guidelines

31. The TWV noted that the TC had considered a proposal to revise the procedure for partial revisions of Test Guidelines.

32. The TWV welcomed the possibility to have an accelerated procedure for partial revisions of Test Guidelines, allowing the possibility for experts to come with new proposals in the course of the year, respecting the deadline agreed to prepare and circulate the document on time before the session, to allow sufficient time for consideration by members of the Union.

Proprietary method of assessment for male sterility

33. The TWV noted that the TC, at its fifty-fourth session, had agreed that members should propose any alternative methods or markers for DNA marker tests in Test Guidelines.

Suitability of characteristics in previous versions of Test Guidelines

34. The TWV noted that the TC, at its fifty-fourth session, had recalled that it was the responsibility of the TWPs to assess whether characteristics met the requirements for a characteristic, as set out in document TGP/7, including those characteristics in previously adopted Test Guidelines.

Presentation of full scale of notes for quantitative characteristics in Test Guidelines

35. The TWV considered the proposal for the revision of document TGP/7 and agreed that all states of expression for quantitative characteristics should be presented in Test Guidelines.

36. The TWV agreed with the TWO that guidance in document TGP/7 required quantitative characteristics with "1-9" scale to have example varieties for at least three states of expression and "1-5" / "1-4" / "1-3" scales for at least two states of expression. The TWV agreed with the TWO that the proposal to present all states of expression of quantitative characteristics in Test Guidelines and agreed that this would not change the minimum number of example varieties required in document TGP/7, as reproduced below.

"GN 28 (TG Template: Chapter 6.4) – Example varieties

1. Deciding where example varieties are needed for a characteristic

1.1 The General Introduction (Chapter 4.3) states that "example varieties are provided in the Test Guidelines to clarify the states of expression of a characteristic." This clarification of the states of expression is required with respect to two aspects:

(a) to illustrate the characteristic and/or

(b) to provide the basis for ascribing the appropriate state of expression to each variety and, thereby, to develop internationally harmonized variety descriptions. (Further information on these two aspects is provided in Section 4 "Purpose of Example Varieties").

[…]

2. Criteria for Example Varieties

2.1 Availability

Authorities responsible for DUS testing and breeders need to be able to obtain plant material of example varieties and therefore, in general, example varieties should be widely and readily available for the coverage of the Test Guidelines or, in case of regional sets of example varieties, for the region concerned. For this reason, at the point of starting to draft Test Guidelines, drafters are encouraged to seek lists of varieties from interested parties in order to identify example varieties with the widest availability.

2.2 Minimizing the number

"For practical reasons it is recommended to choose the overall set of example varieties for the Test Guidelines in a way that all the desired characteristics and states of expression are covered by the minimum total number of example varieties. This means that, if possible, each example variety should be used for as many characteristics as possible and example varieties should not be used only for one or very few characteristics.

2.3 Agreement of interested experts

2.3.1 The set of example varieties proposed by the Leading Expert in the preparation of the Test Guidelines should be prepared in cooperation with all the interested experts. If one or more expert(s) consider(s) that certain example varieties are not suitable for their conditions, a new example variety should, if possible, be found (see also Section 3 "Multiple sets of example varieties").

2.3.2 It is important that the set of example varieties for a particular characteristic is developed by one expert in order to ensure that the set of example varieties for that characteristic represents the same scale. Example varieties proposed by other experts, for the same characteristic, should be known to represent the same scale before they are accepted in Test Guidelines. In cases where it is necessary to develop a separate scale for different types of variety, or different regions, multiple sets of example varieties may need to be developed (see Section 3 "Multiple sets of example varieties").

2.4 Illustration of the range of expression within the variety collection

The set of example varieties for a given characteristic should provide information on the range of expression of the characteristic in the collection of varieties covered by the Test Guidelines. Thus, in general, it is necessary to provide example varieties for more than one state of expression and in the case of:

Quantitative characteristics:

(i) "1-9" scale: to provide example varieties for at least three states of expression (e.g. (3), (5) and (7)), although, in exceptional cases, example varieties for only two states of expression may be accepted;

(ii) "1-5" / "1-4" / "1-3" scales: to provide example varieties for at least two states of expression.

Pseudo-qualitative characteristics: to provide a set of example varieties to cover the different types of variation within the range of expression of the characteristics. "

TGP/12: Guidance on Certain Physiological Characteristics

Explanations on disease resistance characteristics

37. The TWV noted that the TC, at its fifty-fourth session, had agreed to await the TWV discussion on disease resistance characteristics in DUS examination before considering whether to develop further guidance.

38. The TWV agreed to discuss the use of disease resistance characteristics in DUS examination under the agenda item "Use of Disease resistance characteristics".

Program for the development of TGP documents

39. The TWV noted the program for the development of TGP documents, as set out in document TWP/3/1, Annex VI.

Molecular Techniques

40. The TWV considered document TWP/3/7.

Developments at the seventeenth session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular

41. The TWV noted the report on developments in the TWPs and BMT, as set out in document TWP/3/7, paragraphs 7 to 72.

42. The TWV noted the draft agenda for the BMT at its eighteenth session, as set out in document TWP/3/7, paragraph 73.

Developments at the fifty-fourth session of the Technical Committee

Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')

43. The TWV noted that the European Union, France and the Netherlands would be invited to prepare a new draft of document UPOV/INF/17 for consideration at the eighteenth session of the BMT, as set out in document TWP/3/7, paragraph 75.

44. The TWV proposed that the BMT be invited to provide guidance on elements to be included in a protocol of a DNA marker assay for a specific characteristic.

Cooperation between international organizations

45. The TWV noted that the TC had agreed that UPOV and OECD should make progress on the matters previously agreed by the TC, namely:

(a) to develop a joint document explaining the principal features of the systems of the OECD, UPOV and ISTA;

(b) to develop an inventory on the use of molecular marker techniques, by crop, with a view to developing a joint OECD/UPOV/ISTA document containing that information, in a similar format to UPOV document UPOV/INF/16 “Exchangeable Software”, subject to the approval of the Council and in coordination with OECD and ISTA; and

(c) the proposal for the BMT to develop lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques for consideration by the TC.

46. The TWV noted that ISTA would be invited to join the above initiatives, when in a position to do so.

47. The TWV noted that the Office of the Union would prepare a draft of a joint document explaining the principal features of the systems of the OECD, UPOV and ISTA, for consideration by the BMT, at its eighteenth session, on the basis of relevant texts from the World Seed Partnership and the frequently asked question on the use of molecular techniques in the examination of DUS, as set out in document TWP/3/7, paragraph 79.

48. The TWV endorsed the following elements for the inventory on the use of molecular marker techniques, by crop, proposed by the Office of the Union, with the following additions to reflect the current status of molecular marker techniques (i.e. already in use or in development). (highlighted in grey):

Country or Intergovernmental Organization using molecular marker technique
Source [the name of the Authority] and Contact details [email address]
Type of molecular marker technique
Status (i.e. in current use or in development)
Crop (s) for which the molecular marker technique is used and characteristic concerned (in the case of use) [botanical name(s) and UPOV code(s) to be provided]
Purpose of the use of the molecular technique [UPOV model “Characteristic-Specific Molecular Markers”, UPOV model “Combining Phenotypic and Molecular Distances in the Management of Variety Collections”, Purity, Identity, Verification of hybridity]
Is the molecular marker technique used as part of Seed Certification in the last two years? [National certification, OECD certification] [relevant for OECD seed schemes]
In the last 2 years, how many times did the Authority use the molecular marker techniques?
The molecular marker technique is covered by [UPOV Test Guideline(s), UPOV TGP document(s), other document(s) (please specify)]
Is the molecular technique validated? [If yes, please specify a particular organization or authority] [relevant for OECD seed schemes]

49. The TWV noted that, on the basis of the comments received from the TWPs and BMT, proposed elements for the inventory on the use of molecular marker techniques, would be presented for consideration by the TC at its fifty-fifth session, as set out in document TWP/3/7, paragraph 82.

50. The TWV noted that, subject to agreement by the TC at its fifty-fifth session, a circular would be issued to request the member of the Union to complete the survey as a basis to develop the inventory on the use of molecular marker techniques, by crop, after coordination with the OECD Seed Schemes Bureau, as set out in document TWP/3/7, paragraph 83.

51. The TWV noted that the BMT, at its eighteenth session, would be invited to develop lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques for consideration by the TC at its fifty-fifth session, as set out in document TWP/3/7, paragraph 84.

Revision of document TGP/15 “Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)”

Revision of the model “Combining phenotypic and molecular distances in the management of variety collections”

52. The TWV noted that the Model “Combining Phenotypic and Molecular Distances in the Management of Variety Collections” of document TGP/15, Section 2.2, would be revised at a later stage once an additional threshold level has been implemented in France, as set out in document TWP/3/7, paragraph 87.

Proposal for inclusion of a new model "genetic selection of similar varieties for the first growing cycle"

53. The TWV noted that the TC had agreed with the inclusion of a new model "Genetic selection of similar varieties for the first growing cycle: example French Bean" in document TGP/15, as presented in document TWP/3/7, Annex II

54. The TWV noted that a draft of document TGP/15/2 "Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)" incorporating the new model would be presented to the seventy-sixth session of the CAJ, to be held on October 30, 2019, and if agreed by the CAJ, a draft of document TGP/15/2 would be presented for adoption by the Council at its fifty-third ordinary session, to be held on November 1, 2019, on that basis.

Session to facilitate cooperation in relation to the use of molecular techniques

55. The TWV noted the results of the coordination session at the seventeenth session of the BMT, as set out in document TWP/3/7, paragraphs 62 to 71.

56. The TWV noted that all TWPs would be invited to form discussion groups for the main crops at each TWP to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation, in order to build on the BMT outcomes and feed into the future work of the BMT, as set out in document TWP/3/7, paragraph 97.

57. Following the subgroup discussions, the following information was provided by TWV participants:

Summary of crop and authorities currently using (or under development) biochemical and molecular techniques in the vegetable sector

Tomato	China, European Union, France, Italy, Netherlands, Republic of Korea
Pepper	China, France, Republic of Korea
Watermelon	Republic of Korea
Melon	France, Republic of Korea
Lettuce	France, Italy, Japan, Netherlands, Republic of Korea
Cabbage	European Union, Netherlands, Republic of Korea
Mushroom	Japan
French bean	Netherlands
Pea	Netherlands, United Kingdom
Onion	Netherlands
Eggplant	China

Summary of current use of biochemical and molecular techniques in the vegetable sector

Use:
Management of reference collections
Selection of similar varieties/ grouping characteristics
Variety identification
Enforcement of IP Rights/ infringment
Check specific characteristics (e.g. male sterility, disease resistance: as replacement or addition to bioassay)
Techniques:
SSRs
SNPs
Electrophoresis (Isoenzyme)

Summary of possible areas of cooperation for the use of biochemical and molecular techniques in the vegetable sector

Encourage sharing of data & techniques
Facilitate cooperation & training
Encourage exchange of DNA/market set (no living organisms) and seeds
Ensuring consistency among UPOV members in the use of BMT
Identify focal point for molecular techniques in DUS examination for each UPOV member and make this information available via the UPOV website
Develop guidance on collecting DNA samples, ownership of material exchanges (confidentiality)

Update guidance on how to use information and exchange DNA material
Explore the possibility to build a “UPOV” DNA database, “UPOV” marker set
Develop guidance and/or training for specialized courts/ experts
Set up comparative trials (e.g. Harmores project)
Encourage and promote the work of the BMT as platform to improve cooperation and encourage participation from members
Encourage and improve cooperation with breeders and their representatives

Future program

58. The TWV noted that the TC had agreed the items for discussion on Wednesday, October 16, 2019, to facilitate discussion and cooperation between the TWC and BMT, as set out in document TWP/3/7, paragraph 101.

Use of Disease resistance characteristics

59. The TWV received the following presentations, copies of which are provided in document TWV/53/13 Rev.:

(a) “Use of disease resistance characteristics”, presented by an expert from the European Union.
(b) “Evaluation of disease resistance in vegetable varieties according to UPOV standards. A focus on the Italian activities”, presented by an expert from Italy.
(c) “Disease resistance in DUS”, presented by experts from France and the Netherlands.
(d) “Harmonization of resistance tests to diseases for DUS testing: Harmores 3”, presented by an expert from France (on behalf of the working group).
(e) “Disease resistance in vegetables: What does the European industry do in terms of claims?”, presented by an expert from the European Seed Association (ESA).
(f) “ISF Working Group Disease resistance terminology”, presented by an expert from the International Seed Federation (ISF).

60. The TWV agreed that the current guidance provided in UPOV documents in relation to the use of disease resistance characteristics in Test Guidelines and in DUS examination was clear and sufficient for the time being. The TWV noted that in the scope of disease resistance characteristics, when using QN as type of expression, more than 3 states could be used.

61. The TWV agreed that disease resistance is an important breeding goal therefore cooperation among all stakeholders would be beneficial to ensure the development of DUS examination and Test Guidelines in line with the expectation of the users of the system.

62. The TWV agreed that disease resistance characteristics are important for DUS examination and in particular for distinctness, grouping and variety descriptions. The TWV therefore agreed that it is the responsibility of each TWP to update TGs when and if relevant, and take the appropriate time to include and/or update characteristics with an approved methodology for the assessment of the characteristics (e.g. type of expression QN/QL, common agreed terminology) and for the validated disease test protocol to be followed. In order to achieve this goal the TWV agreed that all stakeholders (i.e. DUS experts, pathologists, breeders) should be consulted/involved and sufficient time should be given to ensure that all DUS examination offices agreed before adding new disease resistance characteristics or a new disease test protocol.

New issues arising for DUS examination

63. In relation the discussion which took place at the the fifty-second session on “Aberrant phenotypes in *Brassica oleracea* var. *botrytis*” (see document TWV/52/20 report”, paragraph 52) it was reported by the representative of Crop Life International, after consultation with members of Crop Life International, that it was not an increasing issue and was not seen, for the time being, as a major problem in plant breeding programs globally. The TWV agreed not to continue further discussion on this item, while inviting experts from France and from observers to report on any developments in the future, if and when relevant.

64. The TWV noted the comment made by an expert from the Netherlands on the increasing use of vegetatively propagated varieties in normally seed-propagated species (e.g. pepper). The TWV recalled that, at its fiftieth session, held in Brno, Czech Republic, it had received a presentation by an expert from the Netherlands, on the same topic” (see document TWV/50/25 “Report”, paragraph 57). The TWV invited the

expert from the Netherlands and other experts to report on latest developments in relation to this trend, and in particular to explain the potential challenges in the scope of DUS examination.

Experiences with new types and species

65. The TWV received a presentation on Water spinach (*Ipomoea aquatica*) by an expert from China. A copy of the presentation is provided in document TWV/53/11.

66. The TWV welcomed the work done to develop a national Test Guidelines for Water spinach (*Ipomoea aquatica*) on the basis of the guidance provided in TGP/7 and agreed to invite experts from China and any other members to report on further developments on the number of applications and the breeding activities to be able to consider the development of a UPOV Test Guidelines for the future, if relevant.

Cooperation in examination

67. The TWV considered document TWP/3/14.

68. The TWV noted the results of the survey of the current situation of members of the Union with regard to cooperation in examination, as set out in the Annex to document TWP/3/14.

69. The TWV noted that the UPOV Office would invite the Council representatives to identify contact the persons for international cooperation in DUS examination and that the information received would be made available on the UPOV website.

70. The TWV noted that the topic of international cooperation in DUS examination would be presented as an introduction to the agenda item “Cooperation in examination” during the normal program for the TWPs to explain the existing possibilities for cooperation between UPOV members.

71. The TWV formed discussion groups to discuss the technical concerns that prevent cooperation in DUS examination and how to overcome the technical concerns raised.

72. Following the subgroup discussions, the following information was provided by TWV participants:

Summary of current limits and obstacles for cooperation in DUS examination for vegetable crops

Appropriate reference collection/ set of example varieties
Difficulties to obtain plant material to complete the local reference collection (phytosanitary measures)
Difficulties to deal with differences in climatic/ geographical conditions
Differences in national Test Guidelines (e.g. missing questions, more/less characteristics)
Obligation for some species to have DUS test carried out in the territory of the country (legal & technical)
Regulations in place in the country
No assesement of disease resistance characteristics in some DUS reports
Divergence on how to observe a characteristic (e.g. different protocols for disease resistance characteristic)
Validation process required to ensure the level of the quality of the DUS examination performed
Lack of information on crops/ DUS tests available
Formal agreement required
Some authorities do not accept reports under certain conditions (e.g. DUS at breeder’s premises)
Discrepencies in disease names and nomenclature
Differences in the variety descriptions
Lack of global database (DNA)
Additional work to create a common database on phenotypical data
Level of experience and expertise of DUS examination office for some crops or some characteristics
Languages

Summary of possible areas for improvement of cooperaton in DUS examination for vegetable crops

Encourage the same base for performing DUS examination with the use of UPOV Test Guidelines
Increase the number of characteristics in Test Guidelines to trigger better harmonization between DUS examination Offices
Identify a contact person for questions in relation to DUS in each authority
Intensify training and support among UPOV members (for DUS purposes)
Encourage the use of internationally agreed terminology for disease

Assess the possibility to develop a common database (with description and molecular information) to be able to choose similar varieties
Create a centralized source of information on DUS examination
Breeders to encourage changes in legal rules to trigger better cooperation among authorities
Encourage participation in UPOV sessions (e.g. TWPs) to create a better network of experts and facilitate training and exchange of information
Make available statistics on current exchange of DUS reports with details on crops and countries
Facilitate establishment of Memorandum of Understanding (MOU) at the technical level (cooperation agreement)
Encourage exchange of DUS staff/ experts
More engagement of the countries in order to be in line with existing Test Guidelines
Transparency regarding the conditions of the DUS examination (e.g. number of varieties in the reference collection)

Guidance for drafters of Test Guidelines

73. The TWV considered document TWP/3/8.

74. The TWV noted the issues on the web-based TG template addressed during 2018, as set out in document TWP/3/8, paragraph 11.

75. The TWV noted the issues currently being addressed on the web-based TG template, as set out in document TWP/3/8, paragraph 12.

76. The TWV noted that the Office of the Union would issue a circular to identify requirements of UPOV members for the development of individual authorities' test guidelines using the web-based TG template.

77. The TWV received a demonstration by the Office of the Union and noted that training on the web-based TG template would be provided to all TWPs, at their sessions in 2019.

78. The TWV agreed that the comments provided by the Office on the draft Test Guidelines should be provided by using the web-based TG Template.

Differences in notes for the assessment of distinctness

79. The TWV considered document TWP/3/13.

80. The TWV noted the existing guidance in the General Introduction and documents TGP/8, TGP/9 and TGP/14 on differences in notes for the assessment of distinctness.

81. The TWV considered the clarification provided in document TWP/3/13, paragraphs 10 to 13.

82. The TWV noted the clarification provided in document TWP/3/13 on how the approach for QN characteristics could be applicable for certain states of expression in some PQ characteristics.

Matters to be resolved concerning Test Guidelines put forward for adoption by the Technical Committee

Watermelon (Partial revision)

83. The TWV considered document TWV/53/9 and agreed the following:

#Char. 34	to be deleted (due to the change of state 1 of Char. 35 to read "absent or very small" this characteristic becomes unsuitable) *TWV: agreed*
Char. 35	to delete "in relation to that of ground color" (per definition, the ground color covers the whole surface) *TWV: agreed*

# Indicates technical issues to be resolved

#Char. 36	to add example variety for state "present" (e.g. one from the current wording) *Leading Expert: to add example varieties "Bonanza" and "Frilly" for state "present"* *TWV: agreed*
#Ad. 33	to delete illustrations (inappropriate to illustrate color, see TGP/7 GN 36) *TWV: agreed*
Ad. 34	- to read "… Observations should be made excluding varieties with ground color black" - to delete "(left)" after photo 1 *Leading Expert: agreed to delete Char. and Ad. 34. Therefore, the text "… Observations should be made excluding varieties with ground color black" should be added to Ad. 35 after the last sentence. Furthermore the photo for state 1 of Ad. 34 should be added next to the photo for state 1 in Ad. 35. So there will be 2 photos to illustrate note 1 in Ad. 35.* *TWV: agreed*
Ad. 36	- to read "… Observations should be made excluding varieties with ground color black" - to delete "(left)" after photo 1 *TWV: agreed*

Watercress

84. The TWV considered document TWV/53/10 and agreed that the development of the Test Guidelines for Watercress be suspended due to the lack of example varieties and the low number of applications received.

Discussions on draft Test Guidelines

**Swiss Chard, Leaf Beet (*Beta vulgaris L. ssp. vulgaris var. flavescens DC.)*

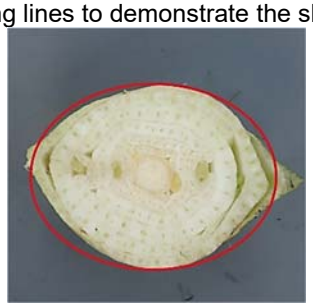
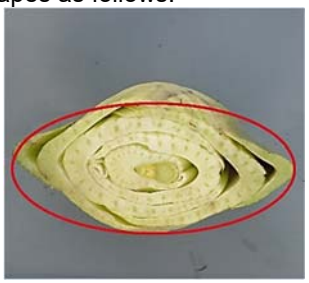
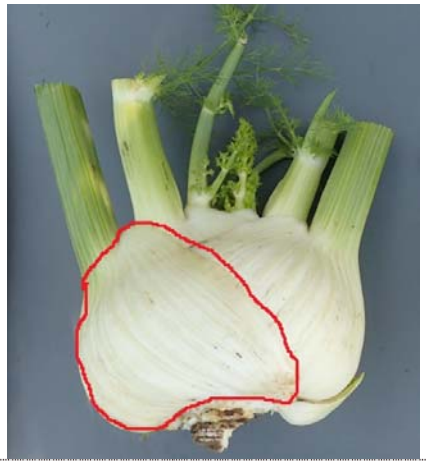
85. The subgroup discussed document TG/106/5(proj.3), presented by Ms. Chrystelle Jouy (France), and agreed the following:

Cover page	coverage for UPOV code BETAA_VUL_GVF to read "*Beta vulgaris* L. ssp. *vulgaris* var. *flavescens* DC." as in guide to the UPOV code system
3.4	to correct numbering (3.4.1 and 3.4.2)
4.2.4	to delete first sentence of second paragraph "The assessment of uniformity should be…"
4.2.5	to be deleted
5.3 (b)	to delete "Observations…"
Chars. 6 to 9	to add (a)
Char. 7	to read "Only varieties…. of green color"
Char. 8	- to add explanation with standard definition on "over color" as follows: "In the case of a plant part which has a ground color upon which a second color such as a flush develops over time, the flush is considered the over color. The over color is not always the color occupying the smallest surface area of the plant part concerned." - to clarify whether it is really an over color (ground color = green) - state 1 to read "absent or light"
Char. 9	- to read "Only varieties…. of purple color"
8.1 (a), (b)	to delete underlined text
Ad. 2	to improve quality of the illustration (legend)
Ad. 10	illustration for state 7 to be improved (does not illustrate strongly reflexes) – see TG Curly Kale
Ad. 15	state 1 to read "absent or weak"
Ad. 18	paragraph 5: to delete "very strongly"
9.	to review format
TQ 5.	to complete abbreviated scales with all states of expression
TQ 7.3	to delete ASW on image of the variety to be provided

**Fennel (*Foeniculum vulgare *Miller)*

86. The subgroup discussed document TG/183/4(proj.2), presented by Ms. Marian van Leeuwen (Netherlands), and agreed the following:

Cover page	to delete synonyms from the alternative names table
1.	to delete sentence excluding bitter fennel
4.2.4	to be deleted
T.o.C	to check whether to add groups (as in TGs Carnation) (e.g. A: with grumolo, B: without grumolo)
Char. 1	to be deleted
Char. 2	to be moved before Char. 1
Char. 3	to read “Only varieties with grumolo formation: absent: …”
Char. 4	- to read “Only varieties with grumolo formation: present: …” - “at harvest maturity” to be moved as explanation to 8.2
Char. 7	to add the following example varieties: state 3: Guttoso state 4: Preludio, Pontino state 5: Virgo, Capriccio state 6: Dragon, Boelli, Pegaso state 7: Idillio, Victorio
Char. 16	to add the following example varieties: state 3: Caravaggio state 5: Fino state 7: Apollo
Char. 17	to add the following example varieties: state 1: Apollo state 2: Fino state 3: Caravaggio
Char. 18	to add the following example varieties: “Rondo” for state 1, “Carmo, Donatello” for state 2, “Conero” 3, “Capo Rizzuto” 4
Char. 19	to add the following example varieties: “Bellotto” for state3, “Caravaggio” for state 7
Char. 21	to read “Plant: bolting”
Char. 22	to read “Time of …” (capital T)
Char. 23	to read “Time of …” (capital T)
Char. 24	“at flowering” to be moved as explanation to 8.2
Char. 27	to read “1000 seed weight”
Ad. 8	state 3 to read “sparse”
Ad. 10	states to read as in Char. 10
Ad. 15	to add the following illustrations  3 low  5 medium  7 high
Ad. 16	to delete sentence

Ad. 17	to improve illustrations by adding lines to demonstrate the shapes as follows:    1 round 2 broad elliptic 3 medium/narrow elliptic
Ad. 19	to read “The sheath is the thickened basal part of the petioles.” and add the following illustration: 

*Chick-pea (*Cicer arietinum *L.) (Revision)*

87. The subgroup discussed document TG/143/5(proj.1), presented by Ms. Chrystelle Jouy (France), and agreed the following:

Table of Chars.	to add growth stages and remove time of observation from title of characteristics (e.g. “after flowering”)
Char. 1	to move “after flowering” in 8.2 or indicate relevant growth stage
Char. 3	to move “when pods fully developed” in 8.2 or indicate relevant growth stage
Char. 4	to be indicated as VG
Char. 6	to be indicated as MS/VG
Char. 8	to be to be indicated as MS/VG
Char. 9	to be indicated as VG
Char. 11	to be indicated as MS/VG
Char. 12	- to check whether to be deleted
Char. 13	- to move wording in brackets in 8.2 or indicate relevant growth stage - to replace “beige” with an appropriate color - to check whether to add more colors
Char. 14	- to delete brackets - to check whether to be combined
Char. 18	to move wording in brackets in 8.2 or indicate relevant growth stage
Char. 19	to add what dry seed means (explanation or growth stage)
Char. 20	to be deleted
8.1 (a), (b)	to be deleted (will be replaced with growth stages)
Ad. 12	to use “≤”
Ad. 15	- to correct spelling of “weight” - to be improved
Ad. 16	to be improved or use drawings
9.	Smartt: to delete (especially chapter 6)
TQ 7.3	to delete ASW on image of the variety to be provided

*Kale (*B. oleracea *L. var.* costata *DC.;* B. oleracea *L. var.* medullosa *Thell.;* B. oleracea *L. var.* sabellica *L.;* B. oleracea *L. var.* viridis *L.;* B. oleracea *L. var.* palmifolia *DC) (Revision)*

88. The subgroup discussed document TG/90/7(proj.1), presented by Mr. Takayuki Nishikawa (Japan), and agreed the following:

General	to check whether ornamental types are covered by the above-mentioned *B. oleracea* variatas
1.2	to be deleted and replaced with GN3 in TGP/7: "Guidance on the use of Test Guidelines for [intraspecific hybrids?] that are not explicitly covered by Test Guidelines is provided in document TGP/13 'Guidance for New Types and Species'"
4.2.4	to check whether to be deleted
4.2.5	to check whether to read "For the assessment of uniformity of hybrid varieties, …"
Table of chars.	to check whether to add more characteristics to cover all species in the scope of these Test Guidelines
Char. 7	- to add explanation to read "Observations should be made on newly developed leaves near the growing point in a fully developed plant." - to read "Young leaf: color" to check whether to be moved before char. 6
Char. 8	to be moved after Char. 10
Chars. 9, 10	to check whether to be combined or whether to have same example varieties in both characteristics
Char. 11	to have states from "absent to very weak" to "strong"
Chars. 12, 13, 14	to reorder to have order of characteristics 14, 12, 13
Char. 15	to read "Plant: number of leaves" and to be move to plant characteristics
Char. 20	to add example varietes
Char. 21	to add example variety for state 9
Char. 22	to check whether to use a different approach with regard to leaves (lobed/entire) and lobes and incisions (see e.g. TG Turnip)
Chars. 23, 24	to check whether to be combined and improve wording "curling" (combination of undulation, creasing (see TG Cauliflower), size of surface)
Char. 28	to delete "Only varieties with …"
8.1 (c)	to read "lobes" instead of "robes"
Ad. 3	to use either all drawings or all pictures
Ad. 6	- to read "Observation should be made on the angle of base of the leaf against the stem." - to replace current illustrations with proposed improved ones
Ad. 8	to correct spelling of "petiole"
Ad. 10	to be completed
Ad. 16	to be completed
Ad. 24	to be improved
9.	format to be reviewed

*Melon (*Cucumis melo *L.) (Partial revision)*

89. The subgroup discussed documents TG/104/5 Rev. and TWV/53/5, presented by Ms. Chrystelle Jouy (France), and agreed the following:

Char., Ad. 75	to replace "Pathotype 0" by "Strain 0"
Ad. 75, 5.	to delete "Strain" (isolate to read "E8" only)

*Pepper (*Capsicum annuum *L.) (Revision)*

90. The subgroup discussed document TG/76/9(proj.1), presented by Ms. Marian van Leeuwen (Netherlands), and agreed the following:

General	- to check whether and how to introduce types for ornamental and vegetable use (see e.g. TG Carnation) (only ornamental use: Chars. 13, 14, 15; only vegetable use: disease resistance characteristics) - to check whether to add more characteristics on fruit
1.	to delete second paragraph
3.1.3	to be deleted
4.1.4	to check consistency of number of plants with 4.2 (20 plants minus number of off-types)
4.2.2	to include vegetatively propagated varieties
4.2.3, 4.2.4	to check whether to be deleted
4.2.6	- to include self-pollinated varieties - to combine with 4.2.7
5.3	to add explanations of types (ornamental and vegetable use) and, if applicable, split grouping characteristics in these two groups
Table of Chars.	to check whether to add new characteristic for “Flower: anthocyanin coloration in filament and “Fruit: curvature”
Char. 1	to add example varieties for ornamental varieties
Char. 3	- to read “Stem: length” and to move with stem characteristics - to add (a)
Char. 4	to move wording in brackets to 8.2
Char. 5	to add example varieties
Char. 5	to read “Only varieties with plant: shortened internodes: present: …”
Char. 6	to read “Only varieties with plant: shortened internodes: absent: …”
Char. 9 - 18	to read “Leaf blade: …” and move to blade characteristics
Char. 13	to check whether to be indicated as PQ
Char. 20	to move wording in brackets to 8.2
Char. 21	to check whether to add another state of expression or to be indicated as QL
Char. 24	to move wording in brackets to 8.2
Char. 25	to delete first “before maturity”
Char. 26	to read “Only varieties with …”
Char. 30	to be indicated “low” to “high”
Char. 33	to move wording in brackets to 8.2
Char. 36	to check whether to read for state 3: “strongly rounded”
Char. 39	“at maturity” to be moved to 8.2
Ad. 30	to be improved

Squash (Partial revision)

91. The subgroup discussed documents TG/119/4 Corr. 2 and TWV/53/6, presented by Ms. Chrystelle Jouy (France), and agreed the following:

Char. 82	- to be indicated as QN and VG - state 2 to read “moderately resistant” and state 3 to read “highly resistant” - to check whether to have notes 1 to 5 and move example variety “Mikonos” to state 4 - to add (+) - to revise the explanation accordingly (particularly 11.2 and 12.)
Ad. 82	to delete empty rows
Ad. 82, 9.3	to delete wording second paragraph

Ad. 82, 11.2	to read as follows: “Class 0: no symptoms Class 1: few chlorotic spots Class 2: many chlorotic spots Class 3: large chlorotic areas (some spots on young leaves) Class 4: mosaic and weak vein banding Class 5: deformation and vein banding”
Ad. 82, 13	to read “assessment” instead of “notation” in the last sentence

*Tomato (*Solanum lycopersicum *L.) (Partial revision)*

92. The TWV received a presentation on the “I2 marker and resistance to Fol - UPOV status May 21, 2019” from the leading expert for Tomato Test Guidelines, Ms. Amanda van Dijk (Netherlands). A copy of this presentation will be provided in document TWV/53/7 Add..

93. The subgroup discussed documents TG/44/11 Rev. and TWV/53/7, presented by Ms. Amanda van Dijk (Netherlands), and agreed the following:

Char. 48	- to only update the names of the characteristics with the new names of the races, but disregard changes to example varieties - to check French and German translation of “race”
Ad. 48	to only reflect changes in “4. Source of inoculum”, “5. Isolate” and “9.3 Control varieties” and disregard all other changes
Ad. 53, 9.3	to read “Susceptible : Marmande verte “Resistant : Garance and (*S. lycopersicum* x S. *habrochaites*) Emperador

94. The TWV agreed to update the following e-mail addresses for obtaining the inoculum in all disease resistance explanations throughout the Test Guidelines for Tomato:

Geves: matref@geves.fr
Naktuinbouw: resistentie@naktuinbouw.nl
INIA: resistencias@inia.sp

Tomato rootstock (Partial revision)

95. The subgroup discussed documents TG/294/1 Corr. Rev. 2 and TWV/53/8, presented by Ms. Amanda van Dijk (Netherlands), and agreed the following:

Char. 24	- to only update the names of the characteristics with the new names of the races, but disregard changes to example varieties - to check French and German translation of “race”
Ad. 24	to only reflect changes in “4. Source of inoculum”, “5. Isolate” and “9.3 Control varieties” and disregard all other changes

96. The TWV agreed to update the following e-mail addresses for obtaining the inoculum in all disease resistance explanations throughout the Test Guidelines for Tomato Rootstocks:

Geves: matref@geves.fr
Naktuinbouw: resistentie@naktuinbouw.nl
INIA: resistencias@inia.sp

**Turnip (*Brassica rapa *L. var. *rapa *L.) (Revision)*

97. The subgroup discussed document TG/37/11(proj.5), presented by Mr. Dominique Rousseau (France), and agreed the following:

Cover page	botanical name to read “*Brassica rapa* L. var. *rapa*”
4.2.4	to be deleted
T.o.C	to check names for example varieties
Char. 1	growth stage to be indicated as 12-70

Char. 2	- to read “Petiole: intensity of anthocyanin coloration” - to be indicated as QN - to have states absent or very weak (1), weak (2), medium (3), strong (4), very strong (5) - to add example varieties - to add explanations that observations should be made on the basal part of the lower side of the leaf
Char. 6	- to read “Leaf blade: number of lobes” - to have states absent or very few (1) to very many (9) - to be indicated as QN - to add example varieties and to harmonize with Char. 7
Char. 7	- to read “Only varieties with leaf blade: number of lobes: absent or very few: Leaf: depth of the incisions of margin at basal part” - to be to be indicated as QN - to have states absent or very shallow (1) to very deep (9) - to add example varieties and to harmonize with Char. 6
Char. 8	to be deleted
Chars. 17-30	- to check whether to use a different grouping for the growing trial - not in line with guidance provided in TGP/7 to exclude varieties following a QN Characteristic - to check whether to use an approach as in for example in TGs for radish, carnation or lettuce
Char. 18	to underline “above”
Char. 19	- to underline “above” - to read color instead of coloration
Char. 20	to underline “below”
Char. 22	- to check whether really QL - to add explanation under which conditions to be observed
Char. 23	- to see Ad. 23
Char. 28	- to check whether states 3 and 7 to read as “moderately depressed” and “moderately raised”
Char. 29	states 1 and 2 to read “acute”
Char. 31	to check wording of example variety of state 5
Char. 32	to check wording of example variety of state 1
Char. 33	to have notes 1, 2, 3
8.1 (a)	to read “leaf”
Ad. 16	- to read “Turnip can be consumed for its roots, but also for its leaves. As a result, the swelling of the root can be strong or, at the opposite, absent or weak, even if intermediate situations exist.” - to check whether to add illustrations
Ad. 23	- to review order of states - to indicate ratio with “low” and “high” instead of compressed and elongated) - state 1 to read “narrow oblate” - state 2 to read “Oblate” - state 7 to read “obovate” - state 8 to read “triangular” - state 9 to read “broad obovate”
9.	Padilla, to read: “...*Brassica rapa* subsp. *rapa*…”
TQ 7.	to delete ASW on image of the variety to be provided
TQ 7.3	To check whether to indicate the use as grouping characteristics for growing trials (see TGs carnation)

Information and databases

(a) UPOV information databases

98. The TWV considered documents TWP/3/4 and TWP/3/4 Add..

UPOV Code System

UPOV code developments

99. The TWV noted that 242 new UPOV codes had been created in 2018 and a total of 8,844 UPOV codes were included in the GENIE database, as set out in document TWP/3/4, paragraph 9.

UPOV code amendments considered by the TC at its fifty-fourth session

100. The TWV noted that the TC, at its fifty-fourth session, had agreed not to delete the UPOV Codes for sweet corn and popcorn and for certain subspecies of *Brassica oleracea*, therefore creating exceptions to the "Guide to the UPOV Code System", as set out in document TWP/3/4, paragraphs 15 and 32.

101. The TWV noted that amendments to the "Guide to the UPOV Code System" would be considered by the TC, at its fifty-fifth session, to be held in Geneva on October 28 and 29, 2019, as set out in document TWP/3/4, paragraph 16.

102. The TWV noted that the TC had agreed to amend the UPOV codes for subspecies in the *Mucuna, Epichloe* and *Neotyphodium* genera and to correct the UPOV codes for *Sesbania sesban*.

103. The TWV noted that the Office of the Union had issued Circular E-18/208 to the designated persons of the members of the Union in the TC, the CAJ, TWPs and contributors to PLUTO, announcing the amendments to UPOV codes and requesting contributors to PLUTO to use the amended UPOV codes from February 22, 2019, as set out in document TWP/3/4, paragraph 21.

TWP checking

104. The TWV noted the invitation to check the amendments to UPOV codes, the new UPOV codes or new information added for existing UPOV codes, and the UPOV codes used in the PLUTO database for the first time, which are provided in document TWP/3/4, Annex II, by December 31, 2019.

105. The TWV noted the invitation to submit comments on Annex II, part A "UPOV codes amendments to be checked", part B "New UPOV codes or new information", and part C "Crop type(s) of UPOV codes used in the PLUTO database for the first time" to the Office of the Union by December 31, 2019.

UPOV codes for Wasabia genus and its species

106. The TWV agreed with the amendments proposed for the UPOV codes WASAB and WASAB_JAP, as set out in document TWP/3/4 Add., paragraph 6, as reproduced below.

Current			Proposal		
UPOV code	Principal botanical name	Other botanical name(s)	UPOV code	Principal botanical name	Other botanical name(s)
WASAB	*Wasabia*	n.a.	EUTRE	*Eutrema* R. Br.	*Esquiroliella* H. Lév.; *Glaribraya* H. Hara; *Martinella* H. Lév.; *Neomartinella* Pilg.; *Platycraspedum* O. E. Schulz; *Taphrospermum* C. A. Mey.; *Thellungiella* O. E. Schulz; *Wasabia* Matsum.
WASAB_JAP	*Eutrema japonicum* (Miq.) Koidz.	*Cochlearia wasabi* Siebold, nom. nud.; *Eutrema koreanum* auct. nonn.; *Eutrema wasabi* Maxim.; *Lunaria japonica* Miq.; *Wasabia japonica* (Miq.) Matsum.; *Wasabia pungens* Matsum.; *Wasabia wasabi* (Maxim.) Makino	EUTRE_JAP	*Eutrema japonicum* (Miq.) Koidz.	*Cochlearia wasabi* Siebold, nom. nud.; *Eutrema koreanum* auct. nonn.; *Eutrema wasabi* Maxim.; *Lunaria japonica* Miq.; *Wasabia japonica* (Miq.) Matsum.; *Wasabia pungens* Matsum.; *Wasabia wasabi* (Maxim.) Makino

PLUTO database

Program for improvements to the PLUTO database

107. The TWV noted the summary of contributions to the PLUTO database from 2015 to 2018 and the current situation of members of the Union on data contribution, as presented in document TWP/3/4, Annex I.

Content of the PLUTO database

108. The TWV noted developments concerning possible expansion of the content of the PLUTO database, as set out in document TWP/3/4, paragraph 87.

109. The TWV noted that the proposals by the WG-DEN at its fifth session concerning possible expansion of the content of the PLUTO database would be considered by the CAJ, at its seventy-sixth session, to be held in Geneva on October 30, 2019, as set out in document TWP/3/4, paragraph 89.

(b) Variety description databases

110. The TWV considered document TWP/3/2.

111. The TWV noted that the TC, at its fifty-fourth session, had agreed with the TWF that the initial step before building any database should be to agree on the information to be shared and the format to exchange and store the information.

112. The TWV noted that the TC, at its fifty-fourth session, had agreed with the proposal by the BMT that, as a first step, discussions on databases should address the issues of how to overcome ownership matters, confidentiality, access to data and material, authorization for work to be performed and availability of results and information to partners.

(c) Exchange and use of software and equipment

113. The TWV considered document TWP/3/5.

Document UPOV/INF/16 “Exchangeable Software”

114. The TWV noted that the Council, at its fifty-second ordinary session, held in Geneva, on November 2, 2018, had adopted document UPOV/INF/16/8 “Exchangeable Software.”

115. The TWV noted that the Office of the Union would issue a circular, inviting the designated persons of the members of the Union in the TC to provide or update information regarding the use of the software included in document UPOV/INF/16.

116. The TWV noted that the Office of the Union would make the information in documents UPOV/INF/16 and UPOV/INF/22 available in a searchable format on the UPOV website on the basis of the approach demonstrated at the fifty-fourth session of the TC in 2019.

Document UPOV/INF/22 “Software and equipment used by members of the Union”

117. The TWV noted that the Council, at its fifty-second ordinary session, held in Geneva, on November 2, 2018, had adopted document UPOV/INF/22/5 “Software and equipment used by members of the Union”.

118. The TWV noted that the Office of the Union would issue a circular, inviting the designated persons of the members of the Union in the TC to provide or update information for document UPOV/INF/22.

(d) UPOV PRISMA

119. The TWV considered document TWP/3/3 and noted the developments concerning UPOV PRISMA.

120. The TWV noted the request expressed by the representative of ISF to explore the possibility to reduce/ limit the number of crop/species listed when starting a new application, in order to avoid confusion on the

choice of the Upov Code/ TQ (for instance by providing the most frequently selected first or priority given to the crop/species where a Test Guidelines is available).

Variety denominations

121. The TWV considered document TWP/3/6.

Possible revision of document UPOV/INF/12 "Explanatory Notes on Variety Denominations under the UPOV Convention"

122. The TWV noted developments concerning a possible revision of document UPOV/INF/12 "Explanatory Notes on Variety Denominations under the UPOV Convention", as set out in document TWP/3/6, paragraphs 6 to 8.

123. The TWV noted that the CAJ, at its seventy-fifth session, had agreed to request the TC to consider proposals received by the WG-DEN to revise the list of classes in document UPOV/INF/12/5, as set out in document TWP/3/6, paragraph 9:

124. The TWV noted the proposals to revise the list of classes 203 and 205 in document UPOV/INF/12/5, as set out in document TWP/3/6, paragraph 9, in anticipation of consideration of this matter by the Technical Committee.

125. The TWV agreed with the proposal to revise Class 205 as proposed in document TWP/3/6 "Variety Denominations.

Revision of the ninth edition of the ICNCP

126. The TWV noted that the CAJ had agreed that the Office of the Union contribute to the revision of the ninth edition of the ICNCP on the basis of document UPOV/INF/12/5 and the work of the WG DEN, as set out in document TWP/3/6, paragraph 14.

Possible development of a UPOV similarity search tool for variety denomination purposes

127. The TWV noted that the WG-DEN, at its fifth meeting, had agreed that the Office of the Union should restart its work to explore possibilities to improve the UPOV Denomination Similarity Search Tool in conjunction with the Community Plant Variety Office of the European Union (CPVO).

Non-acceptable terms

128. The TWV noted that the WG-DEN, at its fifth meeting, had agreed to propose not to pursue further the matter in relation to the item "Non-acceptable terms".

Date and program of the next meeting

129. The TWV noted that the WG-DEN, at its sixth meeting, to be held in Geneva, in the evening of October 29, 2019, had agreed to discuss the revision of document UPOV/INF/12/5 "Explanatory Notes on Variety Denominations under the UPOV Convention.

Recommendations on draft Test Guidelines

(a) Test Guidelines to be put forward for adoption by the Technical Committee

130. The TWV agreed that the following draft Test Guidelines should be submitted to the TC for adoption at its fifty-fifth session, to be held in Geneva on October 28 and 29, 2019, on the basis of the following documents and the comments in this report:

Subject	Basic Document(s) (2019)
*Fennel (*Foeniculum vulgare* Miller) (Revision)	TG/183/4(proj.2)

Melon (*Cucumis melo* L.) (Partial revision: Char. 75 “Resistance to Melon necrotic spot virus (MNSV) E8 strain”)	TG/104/5 Rev., TWV/53/5
*Swiss Chard, Leaf Beet (*Beta vulgaris* L. ssp. *vulgaris* var. *flavescens* DC.) (Revision)	TG/106/5(proj.2)
Tomato (*Solanum lycopersicum* L.) (Partial revision: Chars. and Ads. 48 and 53)	TG/44/11 Rev., TWV/53/7
Tomato rootstock (Partial revision: Chars. and Ads. 24 and Ad. 28)	TG/294/1 Corr. Rev. 2, TWV/53/8

(b) Test Guidelines to be discussed at the fifty-fourth session

131. The TWV agreed to discuss the following draft Test Guidelines at its fifty-fourth session:

Subject	Basic Document(s) (2019)
*Chick-pea (*Cicer arietinum* L.) (Revision)	TG/143/4(proj.1)
Chinese cabbage (*Brassica rapa* subsp. *pekinensis* (Lour.) Hanelt) (Revision)	TG/105/4
Egg plant (*Solanum melongena* L.) (Revision)	TG/117/4
Kale (*B. oleracea* L. var. *costata* DC.; *B. oleracea* L. var. *medullosa* Thell.; *B. oleracea* L. var. *sabellica* L.; *B. oleracea* L. var. *viridis* L.; *B. oleracea* L. var. *palmifolia* DC.) (Revision)	TG/90/7(proj.1)
Pepper (*Capsicum annuum* L.) (Revision)	TG/76/9(proj.1)
Squash (Partial revision: to add new Characteristics “Resistance to ZYMV” and “Resistance to Watermelon mosaic virus”)	TG/119/4 Corr. 2, TWV/53/6
Tomato (*Solanum lycopersicum* L.) (Partial revision: Chars. and Ads. 46 “Resistance to Mi” and 48 “Resistance to Fol”)	TG/44/11 Rev.
Tomato rootstock (Partial revision: Chars. and Ads. 22 “Resistance to Mi”, 23 “Resistance to Va and Vd”, 24 “Resistance to Fol”)	TG/294/1 Corr. Rev. 2
Turnip (*Brassica rapa* L. var. *rapa* L.) (Revision)	TG/37/11(proj.5)

132. The leading experts, interested experts and timetables for the development of the Test Guidelines are set out in Annex III to this report.

(c) Draft Test Guidelines for possible future discussion

133. The TWV agreed on the following draft Test Guidelines for discussion at a future session:

Subject	Basic Document(s) (2019)
Mizuna (*Brassica rapa* L. subsp. *nipposinica* (L. H. Bailey) Hanelt)	NEW
Watercress	TG/NASTU(proj.4) and TWV/53/10
Water spinach (*Ipomoea aquatica*)	NEW

Chairperson

134. The TWV agreed to propose to the TC that it recommend to the Council to elect Ms. Marian van Leeuwen (Netherlands), as the next chairperson of the TWV.

Date and place of the next session

135. At the invitation of Brazil, the TWV agreed to hold its fifty-fourth session in Brasilia, Brazil, from May 11 to 15, 2020.

Future program

136. The TWV proposed to discuss the following items at its next session:

1. Opening of the Session
2. Adoption of the agenda
3. Short reports on developments in plant variety protection
   (a) Reports from members and observers
   (b) Reports on developments within UPOV (oral report by the Office of the Union)
4. Molecular Techniques
   (a) Developments in UPOV (document to be prepared by the Office of the Union)
   (b) Presentation on the use of molecular techniques in DUS examination (presentations invited from members of the Union)
5. TGP documents
6. Variety denominations (document to be prepared by the Office of the Union)
7. Information and databases
   (a) UPOV information databases (document to be prepared by the Office of the Union)
   (b) Variety description databases (document to be prepared by the Office of the Union and documents invited)
   (c) Exchange and use of software and equipment (document to be prepared by the Office of the Union)
   (d) UPOV PRISMA (document to be prepared by the Office of the Union)
8. Experiences with new types and species (oral reports invited)
9. New issues arising for DUS examination (presentations invited from members of the Union)
10. Use of disease resistance characteristics (presentations invited from members of the Union and observers)
11. Matters to be resolved concerning Test Guidelines put forward for adoption by the Technical Committee (if appropriate)
12. Discussions on draft Test Guidelines (Subgroups)
13. Recommendations on draft Test Guidelines
14. Guidance for drafters of Test Guidelines
15. Date and place of the next session
16. Future program
17. Report on the session (if time permits)
18. Closing of the session

Visit

137. On the afternoon of May 22, 2019, the TWV visited the Yeoju Breeding Institute of the Nongwoo Bio breeding company in Yeoju, near Seoul, comprising 20 hectares of cultivating area including 8 hectares of greenhouses. The main breeding programs of of Nongwoo Bio include pepper, cucumber, watermelon, tomato, broccoli, cabbage and onion. The TWV was welcomed by Mr. Sang Jik Lee, Director, Biotechnology Institute. During the visit, the TWV was guided by Mr. Soon-ho Choi, Director, Research and Development. The TWV visited growing trials for tomatoes, chili, cabbage and radish as well as the supply chain plant facility and the quality assurance department.

138. The TWV adopted this report at the close of its session.

[Annex I follows]

Annex I

LIST OF PARTICIPANTS

I. MEMBERS

BRAZIL

Ricardo ZANATTA MACHADO (Mr.), Fiscal Federal Agropecuário, Coordinator of SNPC, Serviço Nacional de Proteção de Cultivares (SNPC), Ministério da Agricultura, Pecuária e Abastecimento, Esplanada dos Ministerios, Bloco 'D', Anexo B, Sala 347, 70043-900 Brasilia , D.F.
(tel.: +55 613218 2549 fax: +55 61 3224 2842
e-mail: ricardo.machado@agricultura.gov.br)

CANADA

Jennifer ROACH (Ms.), Examiner, Plant Breeders' Rights Office, Canadian Food Inspection Agency (CFIA), Room 59-2E-332 - 59 Camelot Drive, Ottawa Ontario K1A 0Y9
(tel.: +1-613-773-7196 fax: +1 613 773 7115 e-mail: Jennifer.Roach@canada.ca)

CHINA

Hairong CHEN (Mr.), Researcher, Shanghai Academy of Agricultural Sciences, Shanghai Station for DUS Testing Center of New Plant Varieties, No. 888 Yezhuang Road, Fengxian District, 201415 Shanghai
(tel.: +86 21 5746 0009 fax: +86 21 5746 0009 e-mail: sh57460009@163.com)

Li REN (Ms.), Associate Researcher, Shanghai Academy of Agricultural Sciences, Shanghai Station for DUS Testing Center of New Plant Varieties, No. 888 Yezhuang Road, Fengxian District, 201415 Shanghai
(tel.: +86 21 5746 0009 fax: +86 21 5746 0009 e-mail: renliaqx@163.com)

CZECH REPUBLIC

Daniel PAJAS (Mr.), Expert for DUS Testing of Vegetable, Central Institute for Supervising and Testing in Agriculture (ÚKZÚZ), Experimental station Dobrichovice, Prazska 586, 252 29 Dobrichovice
(tel.: +420 608 70 30 75 e-mail: daniel.pajas@ukzuz.cz)

EUROPEAN UNION

Céline MORINEAU (Ms.), Technical Expert, Community Plant Variety Office (CPVO),
3, boulevard Maréchal Foch, CS 10121, 49101 Angers
(tel.: +33 2 41 25 64 69 e-mail: morineau@cpvo.europa.eu)

Sergio SEMÓN (Mr.), Quality Audit Team Leader, Community Plant Variety Office (CPVO)
(e-mail: semon@cpvo.europa.eu)
[via WebEx]

Gerhard SCHUON (Mr.), Head, Technical Unit, Community Plant Variety Office (CPVO)
(e-mail: schuon@cpvo.europa.eu)
[via WebEx]

Jean MAISON (Mr.), Deputy Head, Technical Unit, Community Plant Variety Office (CPVO)
(e-mail: maison@cpvo.europa.eu)
[via WebEx]

Laetitia DENECHEAU (Ms.), Technical Expert for Ornamental Plants, Community Plant Variety Office (CPVO)
(e-mail: denecheau@cpvo.europa.eu)
[via WebEx]

FRANCE

Chrystelle JOUY (Ms.), Manager of DUS Vegetable Studies, Groupe d'Étude et de contrôle des Variétés et des Semences (GEVES), GEVES Cavaillon, 4790 route des Vignères, 84250 Le Thor
(tel.: +33 4 90 78 66 64 fax : +33 4 90 78 01 61 e-mail: chrystelle.jouy@geves.fr)

Dominique ROUSSEAU (Mr.), Vegetable DUS Manager, Groupe d'étude et de contrôle des variétés et des semences (GEVES), Unité expérimentale de Brion, Domaine de Boisselière, 49250 Les Bois d'Anjou
(tel.: +33 2 41 57 23 22 e-mail: dominique.rousseau@geves.fr)

Valérie GRIMAULT (Ms.), Head Phytopathology Laboratory, Groupe d'Étude et de contrôle des Variétés et des Semences (GEVES)
(e-mail: valerie.grimault@geves.fr)
[via WebEx]

Thomas BALDWIN (Mr.), Head of Detection Unit, Groupe d'Étude et de contrôle des Variétés et des Semences (GEVES)
(e-mail: thomas.baldwin@geves.fr)
[via WebEx]

GERMANY

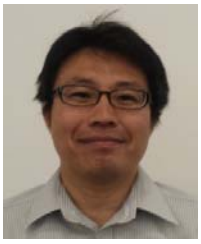
Swenja TAMS (Ms.), Head of Section, General Affairs of DUS Testing, Bundessortenamt, Osterfelddamm 80, 30627 Hannover
(tel.: +49 511 95600 5607 fax: +49 511 9566 9600
e-mail: Swenja.Tams@bundessortenamt.de)

ITALY

Romana BRAVI (Ms.), Supervisor of Vegetable DUS Testing, Agricultural Research Council and Economics Analysis, Plant Protection and Seed Certification (CREA-DC), Via di Corticella 133, 40128 Bologna I
(tel.: +39 051 631 6880 fax: +39 051 631 6898 e-mail: romana.bravi@crea.gov.it)

JAPAN

Kazunari HORIGUCHI (Mr.), Senior Examiner, Plant Variety Protection Office, Intellectual Property Division, Food Industry Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries (MAFF), 1-2-1 Kasumigaseki, Chiyoda-ku, 100-8950 Tokyo
(e-mail: kazunari_horiguch480@maff.go.jp)



Takayuki NISHIKAWA (Mr.), Senior Staff, DUS Test Section, Tsukuba headquarters, National Center for Seeds and Seedlings (NCSS), National Agriculture and Food Research Organization (NARO), 2-2, Fujimoto, Tsukuba-shi, Ibaraki
(e-mail: taka0609@affrc.go.jp)

KENYA

Gentrix N. JUMA (Ms.), Chief Inspector, DUS Examiner, Kenya Plant Health Inspectorate Service (KEPHIS), PO BOX 49592, 00100 Nairobi
(tel.: +254 20 3536171 e-mail: gjuma@kephis.org)

NETHERLANDS

Marian VAN LEEUWEN (Ms.), DUS Specialist Vegetable Varieties, Team DUS Vegetable Crops, Variety Testing Department, Naktuinbouw, Sotaweg 22, P.O. Box 40, 2370 AA Roelofarendsveen
(tel.: +31 6 11 360 698 e-mail: m.v.leeuwen@naktuinbouw.nl)

Amanda VAN DIJK-VELDHUIZEN (Ms.), Manager DUS, Naktuinbouw Rassenonderzoek (Variety Testing), Sotaweg 22, 2371 GD Roelofarendsveen
(fax: +31 6 46 841 019 e-mail: a.v.dijk@naktuinbouw.nl)

REPUBLIC OF KOREA

Byung Kook CHOI (Mr.), Director General, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Mun Jin PANG (Mr.), Director, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Tae Yong LEE (Mr.), Director, Crop Seed Production & Distribution Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Yoojin LEE (Ms.), Researcher, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Daegwangreongro 219-66, Daegwangreongmyeon, Pyeongchanggun, Gangwon do
(tel.: +82 33 336 6243 fax: +82 33 335 9722 e-mail: eugene0630@korea.kr)

Eun-Jung HEO (Ms.), Agricultural Researcher, Seobu Branch, Korea Seed and Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), 1177 Hamnang-ro, Iksan-Si, Jeollabuk-Do 54521
(tel.: +82 63 862 7667 fax: +82 63 862 0069 e-mail: heoej@korea.kr)

Byung Cheon YU (Mr.), Examiner, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA),
Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo
(tel.: +82 54 912 0205 fax: +82 54 912 0145 e-mail: ybc1209@korea.kr)

Won Sig LEE (Mr.), Examiner, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo
(tel.: +82 54 912 0110 fax: +82 54 912 0145 e-mail: leews6@korea.kr)

Hee Young JEON (Ms.), Deputy Director, Seed Business Assistance Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo
(tel.: +82 54 912 0170 fax: +82 54 912 0175 e-mail: hyjun@korea.kr)

Jin Bae GIM (Mr.), Assistant Officer, Seed Business Assistance Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo
(tel.: +82 54 912 0171 fax: +82 54 912 0175 e-mail: gateoftime@korea.kr)

Eun Sun CHUNG (Ms.), Examiner, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Gyeong Yeon GEUM (Mr.), Deputy Director, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Jun Hwan CHOI (Mr.), Researcher, Plant Variety Protection Division, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA), Hyeoksin 8-ro 119, Gimcheon-si, Gyeongsangbukdo

Woo Gun SHIN (Mr.), Researcher, Gyeongnam Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Eun Hee JEON (Ms.), Researcher, Gyeongnam Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Yu Na AN (Ms.), Researcher, Gyeongnam Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

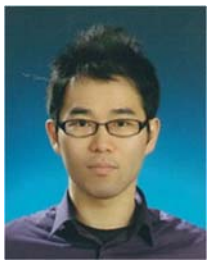
Min Ji PARK (Ms.), Assistant Officer, Gyeongbuk Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Hong Kil KWAK (Mr.), Deputy Director, Jeju Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Hyun Woo OH (Mr.), Researcher, Jeju Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Oh Gwon JEON (Mr.), Deputy Director, Dongbu (East) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Keum Soon PARK (Ms.), Researcher, Dongbu (East) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)



Lak Jung CHOI (Mr.), Researcher, Dongbu (East) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Dan Bi KIM (Ms.), Assistant Officer, Dongbu (East) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Ga Hyun SON (Ms.), Researcher, Seobu (West) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Bo Kyoung YOON (Ms.), Assistant Officer, Seobu (West) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Kyoung In SEO (Ms.), Researcher, Seobu (West) Branch Office, Korea Seed & Variety Service (KSVS), Ministry of Agriculture, Food and Rural Affairs (MAFRA)

Oh Woung KWON (Mr.), Director General, National Forest Seed Variety Center, 72 Suhoeri-ro, Suanbo-myeon, Chungju-si, Chungcheongbuk-do (tel.: +82 43 850 3310)

Yong Seok JANG (Mr.), Director, Department of Plant Variety Examination, National Forest Seed Variety Center, 72 Suhoeri-ro, Suanbo-myeon, Chungju-si, Chungcheongbuk-do (tel.: +82 43 850 3320)

Yong Rak GWON (Mr.), Examiner, National Forest Seed Variety Center

Mu Seok HAN (Mr.), Examiner, National Forest Seed Variety Center

Tae Hoon KIM (Mr.), Researcher, National Forest Seed Variety Center

Yoon Young KIM (Mr.), Researcher, National Forest Seed Variety Center

Ho Sun LEE (Mr.), Senior Researcher, Rural Development Administration, 370, Nongsaengmyeong-ro, Jeonju-si, Jeollabuk-do
(e-mail: hosun83@korea.kr)

Ju Hee RHEE (Ms.), Senior Scientist, Rural Development Administration, 370, Nongsaengmyeong-ro, Deokjin-gu, Jeonju-si, Jeollabuk-do, 54874

Jae Jong NOH (Mr.), Senior Sceintis, Rural Development Administration,370, Nongsaengmyeong-ro, Deokjin-gu, Jeonju-si, Jeollabuk-do, 54874

Ji Hye MOON (Ms.) Senior Researcher, National Institute of Horticultural and Herbal Science, 100 Nongsaengmyeong-ro, Wanju-gun, Jeollabuk-do

TURKEY

Sitki ERMIS (Mr.), Agricultural Engineer, Variety registration and Seed certification centre, Gayret Mah. Fatih Sultan Mehmet, Bul. No. 62, Yenimahalle, 06172 Ankara
(tel.: +90 312 315 4605 fax: +90 312 315 0901 e-mail: sitki.ermis@tarimorman.gov.tr, seedman37@gmail.com)

Akin ÖRSDÖVEN (Mr.), Agricultural Engineer, Variety registration and Seed certification centre, Gayret Mah. Fatih Sultan Mehmet, Bul. No. 62, Yenimahalle, 06172 Ankara
(tel.: +90 312 315 4605 fax: +90 312 315 0901 e-mail: akin.orsdoven@tarimorman.gov.tr)

Kursat Murat SOYLU (Mr.), Agricultural Engineer, Variety registration and Seed certification centre, Gayret Mah. Fatih Sultan Mehmet, Bul. No. 62, Yenimahalle, 06172 Ankara
(tel.: +90 312 315 4605 fax: +90 312 315 0901
e-mail: kursatmurat.soylu@tarimorman.gov.tr)

UNITED KINGDOM

Tom CHRISTIE (Mr.), Head of Variety Testing, SASA, Roddinglaw Road, Edinburgh EH12 9FJ
(tel: +44 131 244 8961 e-mail: tom.christie@sasa.gov.scot)

UNITED REPUBLIC OF TANZANIA

Lawrence YOBU NDOSI (Mr.), Agricultural Officer, P.O. Box 2182 Kilimo IV, Dodoma
(tel.: +255 719 937775 e-mail: lawrenceyobu@gmail.com)

II. ORGANIZATIONS

CROPLIFE INTERNATIONAL

Marcel BRUINS (Mr.), Consultant, CropLife International, 326 Avenue Louise, Box 35, 1050 Brussels, Belgium
(tel. : +32 2 542 0410 fax : +32 2 542 0419 e-mail : mbruins1964@gmail.com)

EUROPEAN SEED ASSOCIATION (ESA)

Christophe ROUILLARD (Mr.), Technical Manager Plant Health and Seed Trade, European Seed Association (ESA), Avenue des Arts 52, 1000 Brussels , Belgium
(tel.: +32 2743 2860 e-mail: christopherouillard@euroseeds.eu)

INTERNATIONAL SEED FEDERATION (ISF)

Szabolcs RUTHNER (Mr.), Regulatory Affairs Manager, International Seed Federation (ISF), Chemin du Reposoir 7, 1260 Nyon, Switzerland
(tel.: +41 22 365 4420 fax: +41 22 365 4421 e-mail: s.ruthner@worldseed.org)

Astrid M. SCHENKEVELD (Ms.), Specialist, Variety Registration & Protection, Rijk Zwaan Zaadteelt en Zaadhandel B.V., Burgemeester Crezéelaan 40, PO Box 40, 2678 KX De Lier, Netherlands
(tel.: +31 174 532414 fax: +31 174 53 21 66 e-mail: a.schenkeveld@rijkzwaan.nl)

Alexandria QUEZADA (Ms.), Intellectual Property Specialist, Bayer, 37437 State Highway 16, Woodland, CA, United States of America
(tel.: +1 530 406-6453 fax: +1 530 666 5759 e-mail: alexandria.quezada@bayer.com)

Maria José VILLALÓN ROBLES (Ms.), PVP Specialist EMEA, Bayer – Crop Science, Monsanto Holland B.V.
(e-mail : mariajose.villalonrobles@bayer.com)
[via WebEx]

III. OFFICER

Romana BRAVI (Ms.), Chair

IV. OFFICE OF UPOV

Ben RIVOIRE (Mr.), Technical/Regional Officer (Africa, Arab Countries), International Union for the Protection of New Varieties of Plants (UPOV), Chemin des Colombettes 34, 1211 Geneva 20, Switzerland
(tel.: +41 22 338 8426 fax: +41 22 733 0336 e-mail: ben.rivoire@upov.int)

Romy OERTEL (Ms.), Secretary II, International Union for the Protection of New Varieties of Plants (UPOV), Chemin des Colombettes 34, 1211 Geneva 20, Switzerland
(tel.: +41 22 338 7293 fax: +41 22 733 0336 e-mail: romy.oertel@upov.int)

[Annex II follows]

Plant Variety Protection in Republic of Korea

Korea Seed and Variety Service

Mun Jin Pang

Contents

Agricultural Circumstances

Introduction

Map of Rep. of Korea

- Land area: 10 m. ha
- Population: 51.4 m. persons

Agriculture(2017)

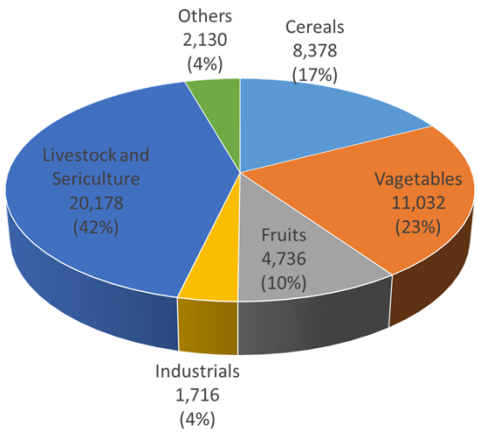
- Farm households (k): 1,042 (5.3%)
  - Farm population (k): 2,422 (4.7%)
- Cultivated Land: 1.62 m. ha
- Cultivated area per farm households: 1.5 ha

Cultivated Area by Crops

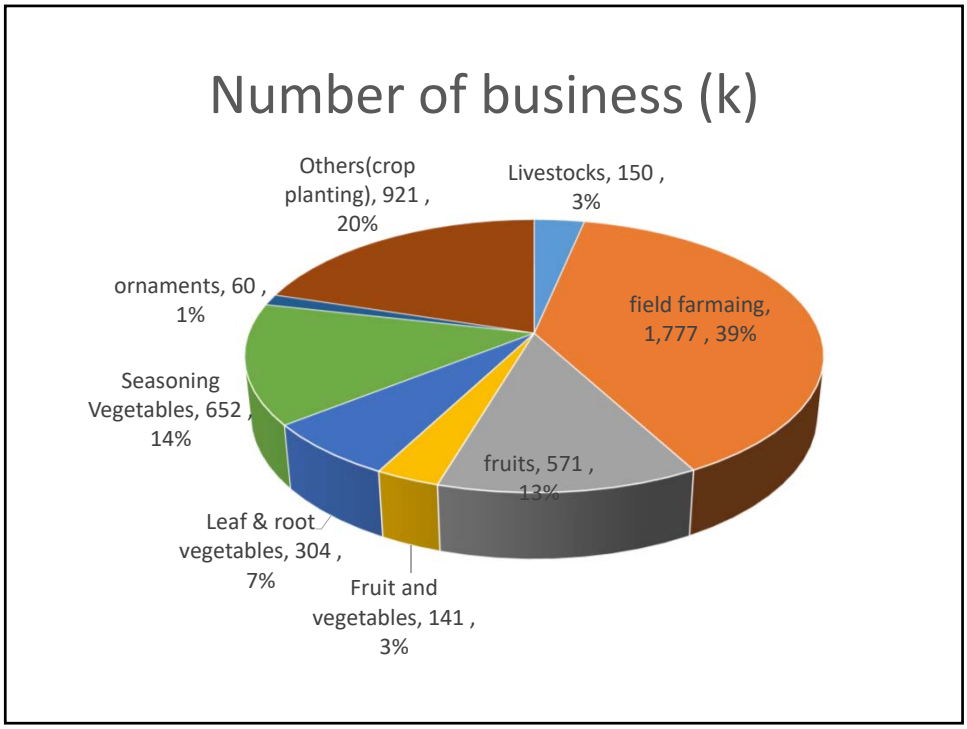
	Area(ha)	(%)
Total	1,641,116	100.0
Rice	754,713	46.0
Barleys	38,379	2.3
Other Cereals	25,800	1.6
Pulses	58,044	3.5
Potatoes	42,658	2.6
Vegetables	272,179	16.6
Industrials	96,394	5.9
Fruits	166,957	10.2
Others	185,992	11.3

Agricultural products in Market Prices (2017)

- Total Products: 48,170 billion won



Crops	Production Amount (billion won)	Ratio (%)
Strawberry	*1,396.4*	*2.9*
Onion	1,119.3	2.3
Garlic	1,116.9	2.3
Chinese cabbage	864.7	1.8
Red pepper	697.3	1.4
Tomato	670.4	1.4
Welsh onion	653.0	1.4
Water melon	643.4	1.3
Apple	1,110.3	2.3
Peach	698.2	1.4
Grapes	593.8	1.2
Ornamentals	563.1	1.2



Seed Industry of Rep. of Korea

Capacity of Seed Industry (2015)

- Total Seed market: 967 bill. won (806 million $)

  ** About 2.2% of world seed market (37,000million $)*

- Seed market: 579 bill. won
  - Public sector: 78.5 bill. won
  - Private sector: 500.8 bill. won
- Seedling market: 388 bill. won

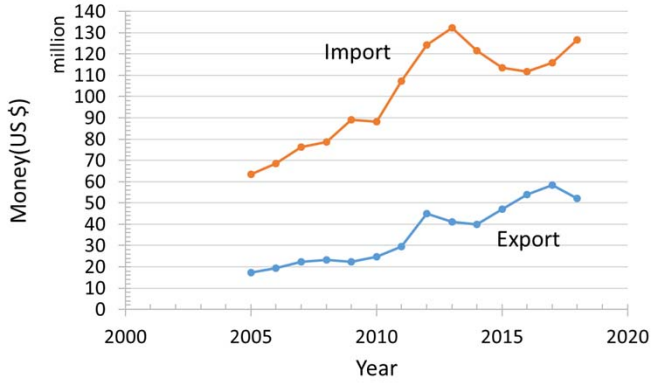
- Seed company: 1,669
  - Total sales > 4 bill. won: 1.4%
  - 0.5 bill. <Total sales < 4 bill. won: 10.7%
  - Total sales < 0.5 bill. won: 87.9%
- Seedling company: 292
  - Total sales > 1 bill. won: 23.8%
  - 0.4 bill. <Total sales < 1 bill. won: 31.2%
  - Total sales < 0.4 bill. won: 45%

Import and Export of Seeds

- Amount of Seed (2018)

  - Import: 17,858 ton

  - Export: 1,488 ton



Import & Export by Crops (2018)

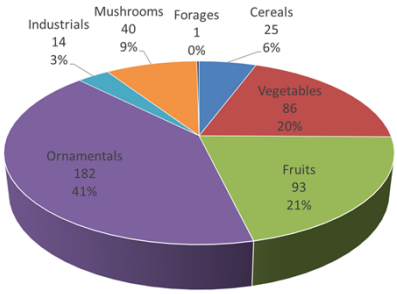
Crop	Import		Export	
	US$	(%)	US$	(%)
Cereals	8,368,577	6.6	508,324	1.0
Forages	29,149,200	23.0	96	0.0002
Ornamentals	6,017,710	4.7	11,321	0.02
Vegetables	75,834,380	59.8	50,766,129	97.1
Forestry	2,049,992	1.6	416	0.0008
Fruits	235,307	0.2	3,778	0.0072
others	5,090,575	4.0	1,007,315	1.9
Total	123,745,741		52,297,379	

Support for Seed Industry Development

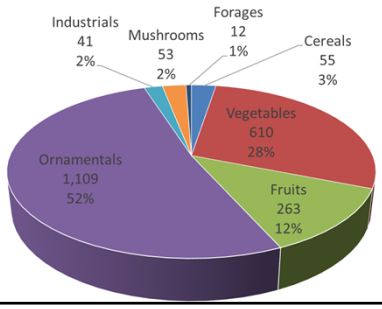
Private Breeders

- Individual or Company less than 20 employees
- 441 persons (2018) ⟵ 100 persons (2005)
- PVP application: 2,143 varieties (21%)
- Granted 1,266 varieties (17%)

Breeders by crops



Application of breeders by crops



Support Private Breeders

- Incentives for PBR
- DNA analysis support
- Overseas training support

Korea New Variety Award (2005~)

- Best Varieties awards: 1998~2004
- Domestically developed New variety
- Selects 8 awards

Domestic Seed Production (2011~)

- To increase domestic seed production
- Crops (11): Chinese radishes, Chinese cabbages,
- Cabbages, Onions, Peppers, Pumpkins
- Budget: 3.5 billion won (50% of seed fee)
- Companies: 39
- Varieties: 344
- Contracted farmers: 990

Variety Demonstration Field

- in Overseas (2011~)
- To check environmental adaptability and marketability
- Budget: 129 million won
- Locals(11): China(1), India(2), Indonesia(2), Vietnam(3), Laos(1), Myanmar(1), Ethiopia(1), Dominican Republic(1)
- Varieties: China(150), India(96), Indonesia(79), Vietnam(198), Laos(6), Myanmar(6), Ethiopia(5), Dominican Republic(4)

PVP in Rep. of Korea

System of Plant Variety Protection

- Seed Industry Law (enforced Dec. 31, 1997)

  - Seed market management and *new plant variety protection*

- UPOV membership

  - Jan. 7, 2002 (50th member country)

- New Plant Variety Protection Law (enforced Jun. 2, 2013)

  - Separated from Seed Industry Law

PVP administration in Rep. of Korea

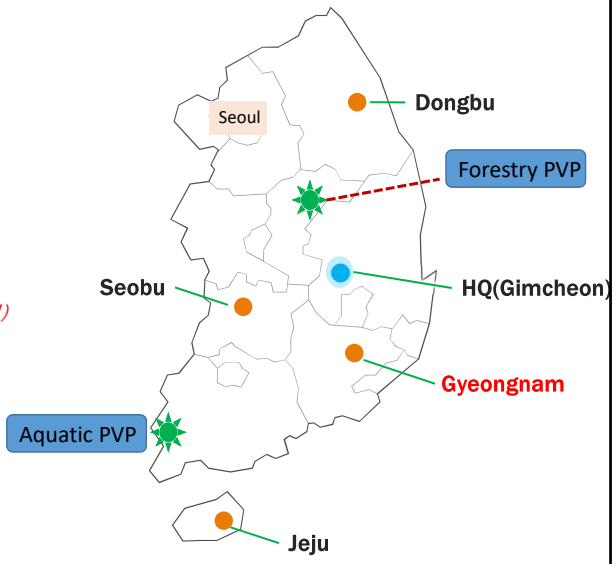
- **Korea Seed and Variety Service (since 1998):**
  - *Agricultural crops*
    - Application: 436 plants, 10,274 varieties
    - Granted: 316 plants, 7,450 varieties (end of 2018)

- **National Forest Seed Variety Center (since 2008):**
  - *Forestry, Wild fruits & vegetables & mushrooms etc.*
    - Application: 110 plants, 417 varieties
    - Granted: 85 plants, 179 varieties (end of 2018)

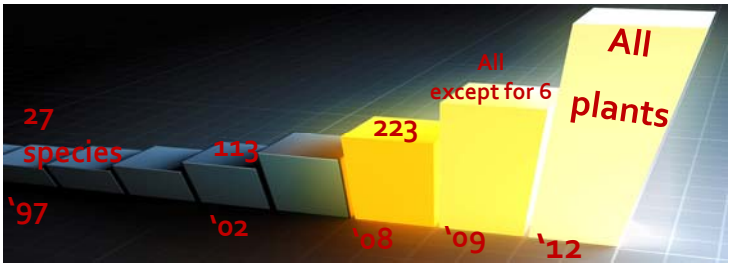
- **Aquatic Plant Variety Center (since 2012):**
  - *Aquatic plants*
    - Application: 3 plants, 36 varieties
    - Granted: 3 plants, 15 varieties (end of 2018)

Location of PVP offices

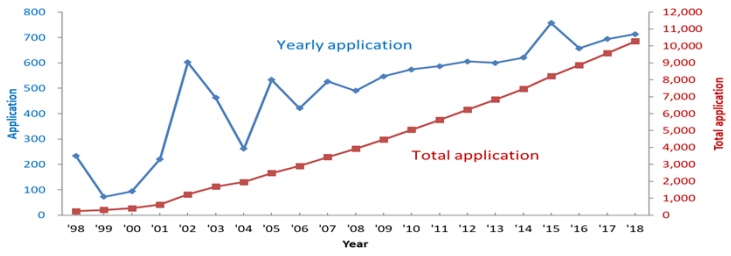
- KSVS Headquarters
  - 4 Divisions, 1 Center
- Provincial Offices (10)
  - Certified Seed production (6)
  - *Growing Trials (3)*
  - Certified Seed + *Growing Trials (1)*



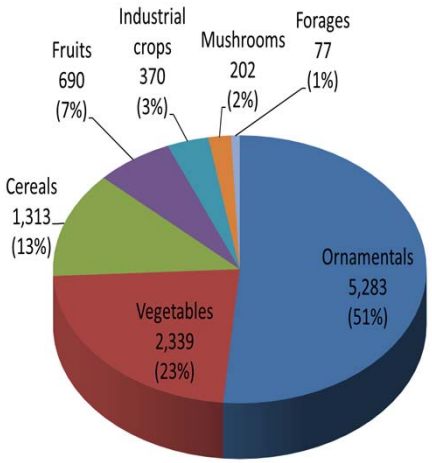
- Designation of Plant Species



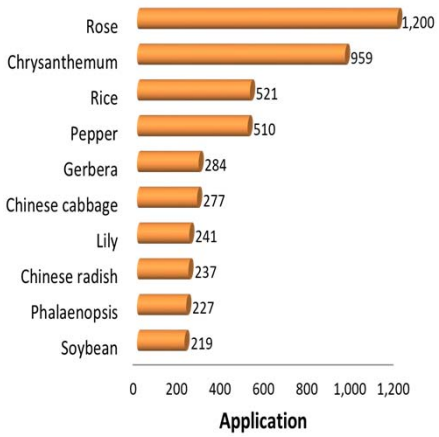
- Variation of PVP application



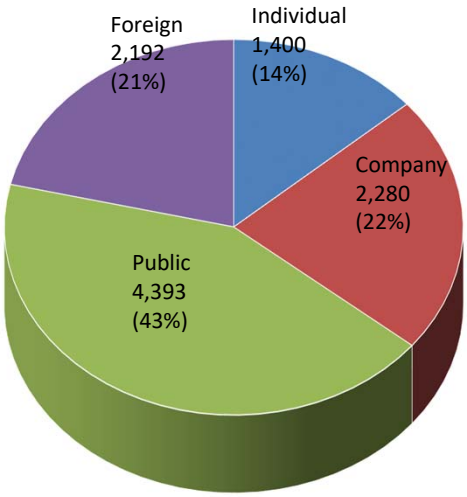
Application by plant usage



Top 10 plants of application

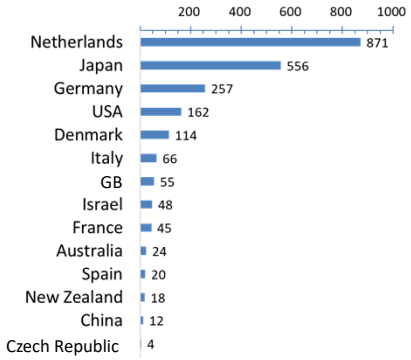


Ratio by Applicants



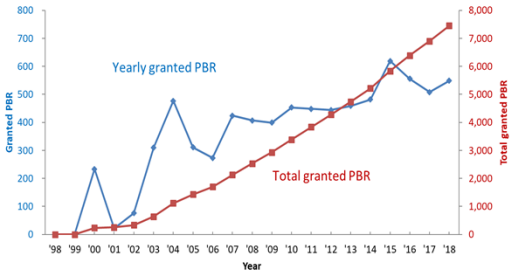
Foreign Applications

- Applied from 21 countries

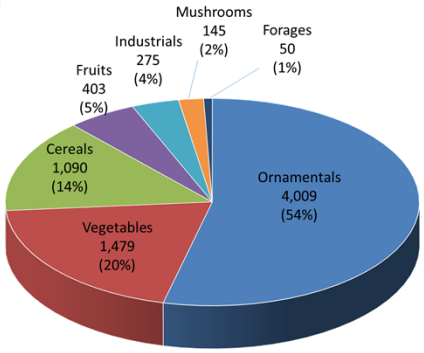


Granted PBR (end of 2018)

- During 2018: 549 varieties granted
- Effective PBR: 5,232 varieties



Granted PBR by Plant Usage



International Cooperation in PVP

Training on Plant Variety Protection and DUS Testing

- 2007~2018: 12 times
  - Total 161trainees from 32 countries

Programs(2018)

Module 1. Agriculture and Seed Industry Introduction of Korea

Module 2. Plant Variety Protection System of Korea

Module 3. DUS examination practice

Module 4. UPOV and UPOV convention

Module 5. Country report and Action plan

Module 6. Korean Culture

Module 7. Field Trip

Module 3. DUS examination practice

- DUS test of Wheat, Phalaenopsis, Rose, Citrus etc
- Seed Disease detection
- DNA technique for Variety classification
- Seed test technique: Seed moisture, seed vigor

MOU with Foreign Countries in PVP

- **Netherlands** (Naktuinbouw, 2014), **Singapore** (IP Office, 2015), **Russian Federation** (Russian Federation for Selection Achievements Test and Protection, 2016), **Kenya** (KEPHIS, 2017), **Viet Nam** (Dept. of Crop Production, 2017), **Uzbekistan** (Center for Agricultural Crop Variety Trials, 2018)

- Technical partnership and exchange of experts
- Provide DUS examination services

Development of Seed Industry in Asia (ODA Project)

(Official Development Assistance)

- 2008~2018: 11 times
- Total 128 trainees from 18 countries of Asian region
- Duration: 2weeks
  - Programs(2018)

    - Plant variety protection system, Seed Industry Introduction
    - Korea's national seed production and distribution system
    - Seed test(purity, moisture, vigor)
    - DNA analysis practice
    - Seed virus test
    - Korea culture

Establishment of International Seed Training Center

- Date of completion: End of May, 2019
- Area: 10,475m²
- Floor area: 6,022m² (4 floor, 1 basement)
- Project cost: 23.8 billion won
- Project duration: 2015~2019

- Purpose: To educate seed experts in seed industry
- Training target: seed industry related personnel, general public, International etc
- Curriculums: about 60/year
- Expected trainee: 1,100 persons/year

Future Development in PVP

Increase of Reliability and Efficiency in DUS Examination

- Management system for example and similar varieties' collection
- Variation of minimum distance between examiners

Better Service to PVP Customers

- Simplification of application documents
- Various PVP information service with new online management system

Strengthening Protection of Plant Breeders Right

- Active Response to Infringement by Special Judicial Police
- Check of Implementation Right to Marketing Varieties

Thank you

[Annex III follows]

Annex III

LIST OF LEADING EXPERTS

DRAFT TEST GUIDELINES TO BE SUBMITTED TO THE TECHNICAL COMMITTEE IN 2019

All requested information to be submitted to the Office of the Union

before July 5, 2019

Species	Basic Document	Leading Expert(s)
*Fennel (*Foeniculum vulgare* Miller) (Revision)	TG/183/4(proj.2)	Ms. Marian van Leeuwen (NL)
Melon (*Cucumis melo* L.) (Partial revision: Char. 75 “Resistance to Melon necrotic spot virus (MNSV) E8 strain”)	TG/104/5 Rev., TWV/53/5	Ms. Chrystelle Jouy (FR)
*Swiss Chard, Leaf Beet (*Beta vulgaris* L. ssp. *vulgaris* var. *flavescens* DC.) (Revision)	TG/106/5(proj.2)	Ms. Chrystelle Jouy (FR)
Tomato (*Solanum lycopersicum* L.) (Partial revision: Chars. and Ads. 48 and 53)	TG/44/11 Rev., TWV/53/7	Ms. Amanda van Dijk (NL)
Tomato rootstock (Partial revision: Chars. and Ads. 24 and Ad. 28)	TG/294/1 Corr. Rev. 2, TWV/53/8	Ms. Amanda van Dijk (NL)

DRAFT TEST GUIDELINES TO BE DISCUSSED AT TWV/54
(* indicates possible final draft Test Guidelines)

(Guideline date for Subgroup draft to be circulated by Leading Expert: January 31, 2020
Guideline date for comments to Leading Expert by Subgroup: February 28, 2020)

New draft to be submitted to the Office of the Union
by March 28, 2020

Species	Basic Document	Leading Expert(s)	Interested Experts (State / Organization)[1]
*Chick-pea (*Cicer arietinum* L.) (Revision)	TG/143/4(proj.1)	Ms. Chrystelle Jouy (FR)	TWA, AU, BR, CA, CN, DE, ES, IT, KR, QZ, TR, US, ESA, ISF, Office
Chinese cabbage (*Brassica rapa* subsp. *pekinensis* (Lour.) Hanelt) (Revision)	TG/105/4	Ms. Yoo Jin Lee (KR)	CN, CZ, DE, FR, JP, NL, QZ, CLI, ESA, ISF, Office
Egg plant (*Solanum melongena* L.) (Revision)	TG/117/4	Ms. Céline Morineau (QZ)	BR, CN, DE, ES, FR, IT, JP, KR, NL, TR, CLI, ESA, ISF, Office
Kale (*B. oleracea* L. var. *costata* DC.; *B. oleracea* L. var. *medullosa* Thell.; *B. oleracea* L. var. *sabellica* L.; *B. oleracea* L. var. *viridis* L.; *B. oleracea* L. var. *palmifolia* DC.) (Revision)	TG/90/7(proj.1)	Mr. Takayuki Nishikawa (JP)	DE, FR, GB, IT, JP, KE, KR, NL, QZ, ESA, ISF, Office
Pepper (*Capsicum annuum* L.) (Revision)	TG/76/9(proj.1)	Ms. Marian van Leeuwen (NL)	BR, CA, CN, CZ, DE, ES, FR, JP, IT, KE, KR, QZ, TR, CLI, ESA, ISF, Office
Squash (Partial revision: to add new Characteristics “Resistance to ZYMV” and “Resistance to Watermelon mosaic virus”)	TG/119/4 Corr. 2, TWV/53/6	Ms. Chrystelle Jouy (FR)	IT, JP, KR, NL, QZ, CLI, ESA, ISF, Office
Tomato (*Solanum lycopersicum* L.) (Partial revision: Chars. and Ads. 46 “Resistance to Mi” and 48 “Resistance to Fol”)	TG/44/11 Rev.	Ms. Amanda van Dijk (NL)	BR, CA, CZ, ES, FR, HU, IS, IT, JP, PL, KR, QZ, RO, RU, CLI, ESA, ISF, Office
Tomato rootstock (Partial revision: Chars. and Ads. 22 “Resistance to Mi”, 23 “Resistance to Va and Vd”, 24 “Resistance to Fol”)	TG/294/1 Corr. Rev. 2	Ms. Amanda van Dijk (NL)	CA, ES, FR, HU, IS, IT, JP, KR, QZ, RO, RU, CLI, ESA, ISF, Office
Turnip (*Brassica rapa* L. var. *rapa* L.) (Revision)	TG/37/11(proj.5)	Mr. Dominique Rousseau (FR)	TWA, CA, CN, CZ, DE, ES, GB, IT, JP, KR, NL, PL, QZ, US, ZA, CLI, ESA, ISF, Office

[1] for name of experts, see list of participants

DRAFT TEST GUIDELINES FOR POSSIBLE FUTURE DISCUSSION

Species	Basic Document(s)
Mizuna (*Brassica rapa* L. subsp. *nipposinica* (L. H. Bailey) Hanelt)	NEW
Watercress	TG/NASTU(proj.4) and TWV/53/10
Water spinach (*Ipomoea aquatica*)	NEW

[End of Annex III and document]