

Technical Working Party for Vegetables

TWV/52/20

**Fifty-Second Session
Beijing, China, September 17 to 21, 2018****Original:** English
Date: September 21, 2018

REPORT*Document prepared by the Office of the Union**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-second session in Beijing, China, from September 17 to 21, 2018. 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 China for hosting the TWV session.
3. The TWV was welcomed by Mr. Zhu Yan, Deputy Director-General, Development Center of Science and Technology, Ministry of Agriculture and Rural Affairs, and Mr. Sun Haoqin, Deputy Director General, Department of Seed Industry Management, Ministry of Agriculture and Rural Affairs. Copies of the welcome addresses are provided in Annex II to this report.
4. The TWV received a presentation by Mr. Yehan Cui, Director, Division chief, Division of Protection of New Varieties of Plants, Development Center of Science and Technology, Ministry of Agriculture and Rural Affairs, on "PVP and DUS testing in China". A copy of the presentation is provided in Annex III to this report.

Adoption of the agenda

5. The TWV adopted the agenda as presented in document TWV/52/1 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/52/3 Prov. The TWV noted that reports submitted to the Office of the Union after August 31, 2018, would be included in the final version of document TWV/52/3.
7. The TWV received a presentation from the representative from the International Seed Federation (ISF) on the work currently done by the ISF Working Group Disease Resistance Terminology in relation to ISF guidelines on the nomination of novel plant pest races. The TWV invited the representative of ISF to report on any new developments in that regard at the next TWV session.

(b) Reports on developments within UPOV

8. 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/52/2](#).

TGP documents

9. The TWV considered document [TWP/2/1](#).

Matters for adoption by the Council in 2018

10. The TWV noted the revisions of TGP documents previously agreed by the TC on the following matters:

- (i) Drafter's Kit for Test Guidelines (document TGP/7)
- (ii) Presentation of different types of example varieties (document TGP/7)
- (iii) Examining DUS in Bulk Samples (document TGP/8)
- (iv) Illustrations for shape and ratio characteristics (document TGP/14)

Matters to be considered by the Technical Committee

TGP/5: Section 1: "Model administrative agreement for international cooperation in the testing of varieties"

11. The TWV noted that the proposed revision of document TGP/5 Section 1 for the inclusion of guidance on confidentiality of molecular information would be put forward for adoption by the Council, at its session in 2018, subject to approval by the TC and the CAJ.

Future revisions of TGP documents

12. The TWV noted that the following matters concerning a possible revision of TGP documents, would be considered by the TC, at its fifty-fourth session:

- (i) Characteristics which only apply to certain varieties (document TGP/7);
- (ii) The Combined-Over-Years Uniformity Criterion (COYU) (document TGP/8);
- (iii) Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions (document TGP/10);
- (iv) Assessing Uniformity by Off-Types on Basis of More than One Growing Cycle or on the Basis of Sub Samples (document TGP/10).

Possible future revisions of TGP documents

TGP/7: Development of Test Guidelines

Procedure for the adoption of draft Test Guidelines

13. The TWV noted that the Council, at its thirty-fourth extraordinary session, had established a procedure for the adoption of Test Guidelines by correspondence. The TWV noted that further amendments to document TGP/7 Section 2.2.8 "Adoption of Draft Test Guidelines by the Technical Committee" would be required to reflect the introduction of the procedure for the adoption of Test Guidelines by correspondence.

14. The TWV noted the recommendation by the TC-EDC for implementing the procedure for adoption of Test Guidelines by correspondence as follows:

- The draft Test Guidelines would be circulated to the TC for adoption by correspondence along with the recommendations by the TC-EDC;
- The draft Test Guidelines would be considered as adopted if no comments were received within six weeks;
- In case any comments were received, the draft Test Guidelines would be referred to the relevant TWP to address those comments.

15. The TWV noted that the TC-EDC had agreed to propose that for Test Guidelines to be considered at the March/April meeting, they would need to be submitted by the Technical Working Parties at least 14 weeks prior to the TC-EDC meeting.

16. The TWV noted that the TC-EDC had agreed that three potential outcomes could be expected from Test Guidelines considered at the March/April meeting:

- (a) no changes required to the Test Guidelines or strictly editorial changes on which recommendations were agreed by the TC-EDC;
- (b) editorial clarifications required;
- (c) technical issues to be resolved.

17. The TWV noted that in cases where no changes were required to the Test Guidelines, or only editorial changes on which recommendations were agreed by the TC-EDC, the Test Guidelines could be circulated for adoption by correspondence.

18. The TWV noted that editorial clarifications required to the Test Guidelines should be provided by the Leading Expert within four weeks and would be considered by the TC-EDC at its meeting in conjunction with the TC session in October/November.

19. The TWV noted that technical issues to be resolved on the Test Guidelines should be addressed at the relevant Technical Working Party session.

Proprietary method of assessment for male sterility

20. The TWV noted that the TC-EDC had recommended that the TC consider the possibility to accept the use of any method other than the proprietary method for the assessment of male sterility in Broccoli, including alternative markers for the DNA marker test, where validated by the testing authorities in UPOV members.

Suitability of characteristics in previous versions of Test Guidelines

21. The TWV noted that the TC-EDC had agreed to recommend to the TC to consider a situation where existing Test Guidelines characteristics did not meet the requirements set out in document TGP/7.

TGP/12: Guidance on Certain Physiological Characteristics

22. The TWV noted that the TC-EDC had agreed to invite the TC to consider whether to provide further guidance on elements that would not need to be completed in explanations for disease resistance characteristics in Test Guidelines using the Standard Resistance Protocol provided in document TGP/12 "Guidance on certain physiological characteristics"

23. The TWV noted that the TC-EDC had recommended that the TC considered providing training at relevant TWPs on providing explanations for disease resistance characteristics in Test Guidelines.

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

24. The TWV noted that the BMT had agreed to propose a revision to document TGP/15 in order to:

(i) reflect the refinements that had been made in France on the basis of its experience in the application of the Model "Combining Phenotypic and Molecular Distances in the Management of Variety Collections"; and

(ii) to include the approach presented by the Netherlands in documents BMT/16/19 "Genetic selection of similar varieties for the first growing cycle: example French bean" and BMT/16/19 Add.

25. The TWV noted that document TGP/15 would be considered further under the agenda item "molecular techniques".

Program for the development of TGP documents

26. The TWV noted the program for the development of TGP documents, as set out in Annex IV to document TWP/2/1.

*TGP/7: Development of Test Guidelines*Duration of DUS tests

27. The TWV considered document [TWP/2/9](#).
28. The TWV considered the proposal to amend guidance in document TGP/7 GN 8 to clarify that “the testing of a variety may be concluded earlier or later at the moment when the competent authority can determine with certainty the outcome of the test”.
29. The TWV noted that the proposed text for a guidance note (GN8) should be featured as standard or additional wording in Test Guidelines in order to be seen by readers of Test Guidelines.
30. The TWV agreed with the TWA and the TWC that the proposed text for a guidance note (GN8) should read as follows:

“The testing of a variety may be concluded ~~earlier or later at the moment~~ when the competent authority can determine with certainty the outcome of the test.”

*TGP/8: Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability*Method for more than one single test (year)

31. The TWV considered document [TWP/2/10](#) and the draft proposal for the revision of guidance in document TGP/8/2: Part II: Section 8: Subsection 8.1.7: “Method for more than one single test (year)” as set out in Annex II to document TWP/2/10.
32. The TWV agreed with the TWA and TWC that the results from different growing cycles should only be combined if the tests are done with the same submission of plant material.
33. The TWV agreed with the TWA and TWC to propose that the two-stage test described in paragraph 8.1.8 should be clarified to state that it is for testing in a single growing cycle.
34. The TWV agreed with the TWC on the importance of considering the risks associated with assessment of uniformity by off-types on the basis of more than one growing cycle and agreed that the calculation of a predefined upper limit of uniformity should be clarified. In that regard the TWV noted the approach developed by France for the theoretical calculation of a predefined upper limit as the maximum off-types accepted plus one on the total sum of the plants for 2 testing cycles (for example each growing cycle requires 20 plants, the predefined upper limit for the assessment of uniformity on the first cycle would be based on the number of off-types accepted plus one on the total number of plants on the basis of the sum of plants to be observed on 2 cycles, in that case 40 plants).

*TGP/14: Glossary of Terms Used in UPOV Documents*Illustrations for shape and ratio characteristics

35. The TWV considered document [TWP/2/11](#).
36. The TWV noted the comments by the TWPs, at their sessions in 2017, and by the TC-EDC, at its meeting in March 2018.
37. The TWV considered the usefulness of grids under particular situations and agreed with the TWA that grids could provide useful information to describe the range of a characteristic. The TWV noted that some leading experts of Test Guidelines had difficulty to provide explanations on shape characteristics using grids. The TWV agreed with the TC-EDC that there should be flexibility for presenting explanations on shape characteristics using grids, provided the states of expression were clearly explained. In that regard the TWV agreed that photos are some time more useful and clear than drawing to illustrate shapes in three dimensions.
38. The TWV considered the possible next steps, as set out in paragraphs 17 to 19 of document TWP/2/11, and agreed with the proposal to establish a sub-group to meet prior to the TC session, in October 2018. The TWV agreed with the proposal that the sub-group discuss and propose the approaches to presenting information when using grids. It further agreed that it could be difficult to define a general rule on the difference in Notes to establish distinctness within a characteristic.

39. The TWV requested the sub-group to also consider roots and tubers, especially when considering the definition of base. In that regard the experts from France and the Netherlands would be happy to assist the work of the sub-group when relevant for vegetables.

UPOV color groups

40. The TWV considered document [TWP/2/12](#).

41. The TWV agreed that color charts were not commonly used in Test Guidelines for vegetables. It noted the development of proposals for the revision of guidance in document TGP/14 “Glossary of Terms used in UPOV Documents” to reflect the introduction of the revised list of UPOV Color Groups and to include guidance on the factors to be considered for creating color groups for grouping of varieties and organizing the growing trial.

42. The TWV noted the comments made by the TC-EDC and in particular on the proposal for the correction of the state of expression “purple red” in the examples for *Campanula* should be corrected to read “red purple”, and further recommended to reflect the change for the UPOV color group 37-38, as reproduced in Annex I of document [TWP/2/12](#).

Molecular Techniques

43. The TWV considered document [TWP/2/7 Rev.](#) and noted the report on developments in the TWPs and BMT, as set out in paragraphs 6 to 37 of document TWP/2/7 Rev. and in document TWV/52/18.

44. The TWV noted that the Office of the Union planned to invite members of the Union to provide sample database models currently in use as a basis to develop further guidance for document UPOV/INF/17 Section 6 “Databases”, including to assess whether the ST-26 standard would be suitable for UPOV purposes or whether a different model would need to be proposed. The TWV agreed on the importance of building reliable databases for the development of the use of molecular techniques in the scope of DUS examination.

45. The TWV considered document TGP/15/2 Draft 1 and the approach “Genetic selection of similar varieties for the first growing cycle: example French bean” presented in document TWP/2/7 Annex.

46. The TWV agreed with the BMT that the approach should be proposed for inclusion in document TGP/15 on the basis of a simplified version of draft text presented in document TGP/15/2 Draft 1. The TWV agreed to invite the Netherlands to review and to simplify the schematic explaining the process, and recommended to clarify on what basis it is decided which comparing varieties to select on the basis of genetic selection in the guidance. The TWV agreed with the BMT that the proposal to be put forward for approval by the TC should contain the description of the method without comparison to other approaches.

47. The TWV noted the developments in relation to international collaboration and encouraged further cooperation in relation to the use of molecular techniques at the international level.

48. The TWV received a presentation “CPVO Report on IMODDUS” by an expert from the European Union. A copy of this presentation is provided in the Annex to document [TWV/52/15](#).

Experiences with new types and species

49. The TWV received the following presentations, copies of which are provided in document [TWV/52/14](#):

- Presentation on *Solanum sisymbriifolium* Lam. by an expert from France
- Presentation on *Solanum torvum* Sw. by an expert from France
- Presentation on a new type of Kale in Japan by an expert from Japan

New issues arising for DUS examination

50. The TWV received the following presentations by an expert from France, copies of which are provided in document [TWV/52/13](#):

- “MILAROM project: Study of Downy Mildew caused by a *Peronospora belbahrii* on Basil in France”
- “Pathotyping Melon necrotic spot virus (MNSV) in Melon”
- “*Meloidogyne incognita* disease resistance test protocol on Pepper”
- “*Pyrenochaeta lycopersici*, causal agent of the corky root disease of Tomato / RT Tomato - FR test protocol”

51. The TWV agreed that, looking at the increase of the use of disease resistance characteristics in DUS examination for vegetables, it would be useful to add a new agenda item in that respect. In particular, it proposed to invite presentations from France, the Netherlands, ISF and any other members and observers on the topic of standardization of the methodology, to understand better the different approaches used by pathologists, breeders and DUS examiners.

52. The TWV received a presentation on “Aberrant phenotypes in *Brassica oleracea* var. *botrytis*” from an expert from France, a copy of which would be provided as an addendum to document TWV/52/13. The TWV noted the results of the study made in France and in the Czech Republic, Netherlands and Spain, about aberrant plants in cauliflower DUS trials, which are not considered as a specific type of off-type, and the possible measures to assess uniformity. The TWV agreed that the problem was not, for the time being, relevant at the international level but invited all DUS examiners to observe potential similar behavior on plants and report to the TWV if need be.

53. The TWV noted that the representative from Crop Life International would consult Crop Life International members to assess whether the problem is relevant in plant breeding programs globally.

Guidance for drafters of Test Guidelines

54. The TWV considered document [TWP/2/8](#).

55. The TWV noted the proposals presented by the TWPs, at their sessions in 2017, for further improvements to the web-based TG template, as set out in paragraphs 7 to 12 of document TWP/2/8.

56. The TWV noted the issues on the web-based TG template addressed during 2017, as set out in paragraphs 13 to 22 of document TWP/2/8.

57. The TWV noted the issues currently being addressed on the web-based TG template, as set out in paragraph 23 of document TWP/2/8.

58. The TWV noted that training on the web-based TG template would be provided to all TWPs, at their sessions in 2018.

Matters to be resolved concerning Test Guidelines adopted by the Technical Committee

**Brown Mustard* (*Brassica juncea* (L.) Czern.)

59. The TWV considered document TWV/52/8 and agreed the following:

2.3	- to read “drilled plots” (see 3.4.2) - to clarify whether the two different seed samples are alternatives (add “or”?) <i>Leading Expert: Yes, please add “or” between the rows.</i> <i>TWV: agreed</i>
3.4.2	to indicate 200 plants (as in proj.5, to be corrected) <i>TWV: agreed</i>

5.3

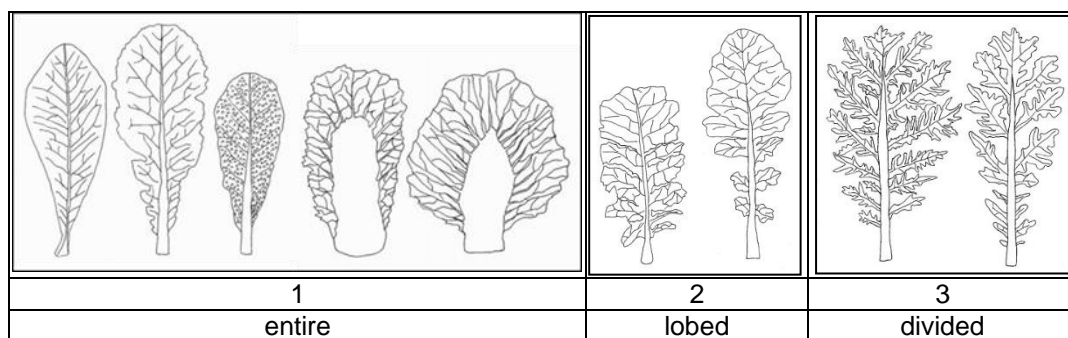
- Definition of types is confusing and should not be used. The drawings clearly show 3 leaf types: entire (unlobed?) / lobed / divided (pinnate?). "Leaf: type" should be added to the table of characteristic. Drawings can be used in 8.2.

TWV: to delete the table in 5.3 and move the illustrations to 8.2 for "Leaf: type" and combine the illustrations of Type 3 and Type 4 as below fig1 in this document.

Please add "Leaf: type" after Char. 4 as follows and add it to 5.3 as grouping characteristic

5.	(*)	PQ	VG	(+)	(a)	19		
		Leaf: type			Feuille : type	Blatt: Lappung	Hoja: tipo	
		entire			entière	ungelappt	entera	Akaoba Takana, Sagami Green, Kekkyu Takana, Miike Takana, Shinkoku Seisai
		lobed			lobée	gelappt	lobulada	Hagarashina, Kigarashina, Terrafit
		divided			découpés	eingeschnitten	dividido	Akariasu, Flaming Frills, Riasu Karashina, Scarlet Frills

Ad. 5: "Leaf: type"



- "Leaf: type" and "Leaf blade: width of midrib" should be added for grouping.

TWV: agreed

- Definition of type 1 to 4 is redundant as it results from leaf type and head formation, if necessary in combination with midrib width.

TWV: agreed not to use definition

The TQ 5. should be amended accordingly. TQ 7.3 (b) should be deleted.

TWV: agreed to add "Leaf: type" and "Leaf blade: width of midrib" to TQ 5

Char. 6

to delete (a) because leaf attitude is observed on more than one single leaf (see Ad. 6)

TWV: agreed

Char. 11

- see proposal under 5.3.

- to read "Only varieties with Leaf: type lobed or divided:"

TWV: agreed

Char. 12

to add example varieties for state 1 (type entire)

Leading Expert: Please add "Akaoba Takana" and "Sagami Green" for state 1.

TWV: agreed

Char. 16

TWV: characteristic to read "Only varieties with Leaf: entire or lobed:...."

Char. 17

- see proposal under 5.3.

- to read "Only varieties with Leaf: type entire or lobed:"

TWV: agreed

Char. 18

- see proposal under 5.3.

- to read "Only varieties with Leaf: type entire or lobed:"

TWV: agreed

Char. 19

- see proposal under 5.3.

- to read "Only varieties with Leaf: type entire:"

TWV: agreed

Chars. 28 to 32	- to delete "Only varieties with head formation: absent:" and move it to a new explanation 8.1 (b) <i>TWV: growth stages to be indicated as 70 to 79</i>
Char. 28	to check whether "Plant: length" should be replaced by "Plant: height" (explanation of this characteristic indicates to observe the total plant height in Ad. 28) <i>TWV: to read "Plant: height"</i>
Char. 33	to move "in the year of sowing under long day conditions" to the explanation <i>TWV: see comment on Ad. 33</i>
8.1 (a)	to read "Observations should be made on the largest fully developed leaf." <i>TWV: agreed</i>
Ad. 3	to replace "measurement" by "observation" <i>TWV: agreed</i>
Ad. 5	to delete reference to ratio from the grid (in legend) <i>TWV: agreed</i>
Ad. 11	See proposal under 5.3. "... In case of <u>divided leaves</u> Type 2 leaf , the shape of <u>the</u> terminal lobe ..." To replace Type 1 by lobed and type 2 by divided. <i>TWV: agreed</i> - to review wording for sentence: Type 2 leaf, the shape of terminal lobes is similar to shape of near other lobes) <i>TWV: to delete this sentence</i> - to read the following sentence "the lateral lobes are the lobes excluding the terminal lobe (No 2,3,4.... in following figures) <i>TWV: agreed</i>
Ad. 16	to check whether to be deleted (Drawing not useful. Reference to type 2 redundant (see proposal under 5.3)). <i>TWV: to delete Ad. 16</i>
Ad. 17	see proposal under 5.3. to read "Observations should be made on the distal part of the leaves, excluding type 2, " <i>TWV: agreed</i>
Ad. 18	to delete sentence <i>TWV: agreed</i>
Ad. 28	to be deleted, if the correct stage of development is indicated (see comment on Char. 28) <i>TWV: agreed</i>
Ad. 29	to check whether to read "Observations on the silique should be made on the middle third of the inflorescence of the main stem." <i>TWV: agreed</i>
Ad. 33	to read "The tendency to form inflorescences in the year of sowing should be observed in late summer sown trials. The observation of the growth stage reached should be made in autumn, when the development stagnates (proportion of plants before bud stage, in bud stage, in flowering stage, in stage of silique formation)." - to check whether to delete reference to season ("autumn" and "summer") <i>TWV: agreed to keep it as it is</i> - to check whether to add "Time of flowering (under long day conditions)" as a new characteristic (observation of flowering date cannot be considered as alternative method. Both characteristics would need different scales) <i>TWV: agreed to keep it as it is</i>
8.3	- other names of the example varieties should become 8.4 - Principal growth stage 5: to correct spelling of "Opening" <i>TWV: agreed</i>
9.	last reference to read "Meier, U.:..." and moved up according to alphabetical order
TQ	See above. The TQ 5. should be amended according to proposed grouping characteristics. TQ 7.3 (b) should be deleted. <i>TWV: agreed</i>

**Calabrese, Sprouting Broccoli* (*Brassica oleracea L. convar. botrytis (L.) Alef. var. cymosa Duch.*) (Revision)

60. The TWV considered document TWV/52/9 and agreed the following:

Table of chars.	<ul style="list-style-type: none"> - to check whether to add growth stages throughout table of characteristics (1 = before harvest maturity, 2 = at harvest maturity) - to complete table of characteristics with indication of type of variety for each example variety (autumn and spring) <p><i>TWV:</i></p> <ul style="list-style-type: none"> - agreed to have three growth stages: 1 = just before harvest maturity, (Chars. 1 to 12) 2 = at harvest maturity (Chars. 13 to 23) 3 = at full flowering (Chars. 24 onwards) - 8.1 (a) to read "Observations should be made on fully developed leaves in the middle third of the plant." - to delete (b) - to indicate S (summer and autumn) and O (overwintering) varieties: The varieties that are O: Burbank, Ember, Cresta, Cardinal, Early White Sprouting, Red Fire, Claret, Red Arrow, Bonarda, Early Purple Sprouting, Mendocino, Broccoli di Natale All other example varieties are S - to add the following to Chapter 6.5 "Legend": (s): summer and autumn varieties (o): overwintering varieties - Example variety "Esquire" should be replaced by "Red Fire" because "Esquire" is an old denomination proposal for the variety "Red Fire". (Characteristic 4) - Example variety "Di Albenga precoce" should be deleted because this appears to be a green cauliflower (Characteristic 8) - In Characteristic 22, the example variety "Marathon" (note 7) should be deleted
Char. 1	<p>to check if (a) is correct (observation on fully developed leaves at the middle level of the plant?)</p> <p><i>TWV: See above</i></p>
Chars. 14, 16, 20, 22	<p>"Only Calabrese type varieties" should be indicated with underline</p> <p><i>TWV: agreed</i></p>
Char. 19	<p>"Only varieties with Head: color: whitish, green, grey green or blue green" should be indicated with underline.</p> <p><i>TWV: agreed</i></p>
Chars. 23, 24	<p>to combine chars. 23 and 24 with both types of example varieties (see general comment on table of chars.)</p> <p><i>TWV: agreed combined characteristic as follows</i></p>

23.	(*)	QN	MG	(+)	(c), (d)		
		Time of harvest maturity	Époque de maturité de récolte	Zeitpunkt der Erntereife	Época de madurez para la cosecha		
		very early	très précoce	sehr früh	muy temprana	Sibsey (s)	1
		early	précoce	früh	temprana	Monflor (s), Red Fire (o)	3
		medium	moyenne	mittel	media	Tinman (s), Mendocino (o)	5
		late	tardive	spät	tardía	Marathon (s), Burbank (o)	7
		very late	très tardive	sehr spät	muy tardía	Hallmark (s)	9

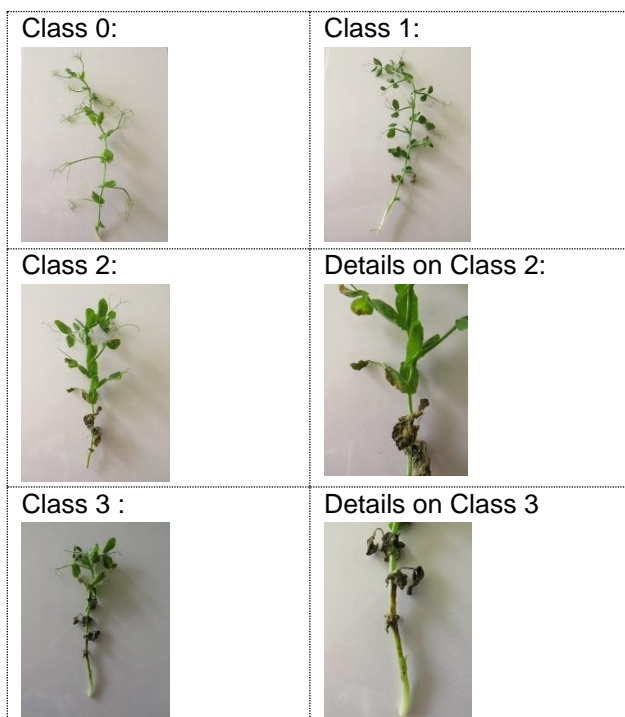
Char. 25	to be indicated as VG only <i>TWV: agreed</i>
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8.1	It is proposed to use growth stages (e.g. 1 – just before harvest maturity, 2 – harvest maturity). (a) could be modified as follows : “Observations should be made on fully developed leaves at the middle of the plant”. (b) should be replaced by stage 2 <i>TWV: agreed, see above answer regarding the table of characteristics</i>
8.1 (c), (d)	move to 8.2 (only chars 23 and 24) <i>TWV: agreed</i>
Ad. 25	- replace “stay sticked to stamen” with “sticks to stamen” - to delete second sentence under field trial (“The observation on the presence of pollen...” - to delete sentences “In case of a field trial, type of observation is VG. In case of a DNA marker test, type of observation is MS.” <i>TWV: agreed</i>
8.3	- to add title (Types of Broccoli) - “Sprouting type: Only multiple <u>Multiple</u> heads ...” <i>TWV: agreed</i>

Pea (Pisum sativum L.)

61. The TWV considered document TWV/52/10 and agreed the following:

Ad. 60	to magnify photos (Are the images large enough to see the detail required? If you zoom on the computer, they have very good resolution but are the details clear enough on the printed page?) <i>TWV: to read as follows (see also changes for Char. 60, Ad. 60, 11., below)</i> <i>(see document TWV/52/10 for pictures in original size)</i>
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Ad. 60, 4. Footnotes 1, 2	to indicate e-mail and web address of the institutions instead of personal e-mail addresses <i>Leading Expert: matref@geves.fr / www.geves.fr</i> <i>TWV: agreed</i>
Ad. 60, 5.	to read “ <i>Ascochyta pisi</i> race C strain 21A.13. (the test protocol has been validated in a European CPVO co-funded project ³ with this isolate)” <i>TWV: agreed</i>
Ad. 60, Footnote 3	to be moved to 9. Literature with standardized format of literature quotes. <i>TWV: agreed</i>

Ad. 60, 6.	to add "Gallais et Bannerot, 1992" to chapter 9. Literature <i>TWV: agreed</i>																
Ad. 60	to delete 8.2, 8.3 and 8.5 <i>TWV: agreed</i>																
Ad. 60, 8.8	to clarify meaning of "4/8h" (does it mean "half hour"?) <i>Leading Expert: it means "between 4 and 8 hours"</i> <i>TWV: agreed</i>																
Char. 60, Ad. 60, 11.	<p>- to provide clarification on type of expression: see explanation, doesn't correspond to QL</p> <p>- the 4-notes scale in Ad. 60, 11.2 "observation scale" indicates QN) clarification by TWV needed</p> <p>- in order to avoid confusion, avoid the term notes <i>TWV: to replace "notes" with "classes", to keep QL but delete illustration on Interpretation depending on controls</i></p> <p>- to check whether to have separate characteristics for each strain (With this explanation it is very unlikely that notes absent/present are appropriate. In particular the photos and the drawing are confusing. Where is the clear gap between 1 and 9?) <i>TWV: to delete all other strains except the strain C as precised below:</i></p> <table border="1"> <tr> <td>Physiological race (Dr. Hubbeling) Strains</td> <td>C</td> </tr> <tr> <td></td> <td>Tézier 21A.13</td> </tr> <tr> <td>Gullivert</td> <td>S</td> </tr> <tr> <td>Rondo</td> <td>R</td> </tr> <tr> <td>Finale</td> <td>R</td> </tr> <tr> <td>Kelvedon Wonder</td> <td>S</td> </tr> <tr> <td>Dark Skin Perfection</td> <td>S</td> </tr> <tr> <td>Arabal, Cobri, Starcovert, Sucovert, Vitalis</td> <td>S</td> </tr> </table> <p>R = resistant; S = susceptible</p> <p>- What means "necrosis at each level of the plant"? Clarification needed. <i>TWV: to read "necrosis on all parts of the plant"</i></p>	Physiological race (Dr. Hubbeling) Strains	C		Tézier 21A.13	Gullivert	S	Rondo	R	Finale	R	Kelvedon Wonder	S	Dark Skin Perfection	S	Arabal, Cobri, Starcovert, Sucovert, Vitalis	S
Physiological race (Dr. Hubbeling) Strains	C																
	Tézier 21A.13																
Gullivert	S																
Rondo	R																
Finale	R																
Kelvedon Wonder	S																
Dark Skin Perfection	S																
Arabal, Cobri, Starcovert, Sucovert, Vitalis	S																

Tomato (*Solanum lycopersicum L.*)

62. The TWV considered documents TWV/52/11 and TWV/52/19 and agreed that Characteristic and Ad. 48 "Resistance to *Fusarium oxysporum* f. sp. *lycopersici* (Fol)" be excluded from the partial revision as research is ongoing and be reconsidered by the TWV at its fifty-third session.

63. The TWV further agreed the following:

General remark	Control varieties in the DNA-test should also be indicated in the bio-test. Why are the control varieties not used as example varieties? <i>Leading Expert: The proposal can be improved by having the same set of varieties in DNA-test, bio-test and as example varieties. See Ad. 51 (ii) 4.2 and Ad. 58 (ii) 4.2.</i> <i>TWV: agreed</i>
Chars. 51, 58	<p>- to be kept as VG (VS not appropriate for DNA marker test, see TGP/9. In case of DNA markers, 20 plants are observed for uniformity. According to chapter 4.1.4 of TG/44/11 Rev., indication of VS is not appropriate.) <i>TWV: agreed</i></p> <p>- DNA marker test to be presented to the BMT to check whether method corresponds to TGP/15 <i>Leading Expert: I will participate in the BMT and the item will be discussed. I will report to the TWV accordingly</i> <i>The TWV noted that the method corresponds to TGP/15 and that document TGP/15 would be revised to include a relevant example</i></p>

<p>Ad. 51 Ad. 58 (Ad. 48 was deleted- see paragraph 62 of this document)</p>	<p>to check whether to read “Resistance to race 0 (ex 1) and race 1 (ex 2) to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate. Resistance to race 2 (ex 3) to be tested in a bio-assay (method i).” (to clarify whether it should be bio-essay only OR bio-essay in conjunction with DNA marker test where required. The gene-specific marker model anticipates a presence of a reliable link between presence of the marker and expression of the characteristic.)</p> <p><i>Leading Expert:</i> <i>Ad. 51</i> <i>To read “Resistance to strain 0, 1 and 2 to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate.” (and to delete last sentence on method of observation)</i> <i>Explanation: both a bio-assay and a DNA-marker test are always accepted. At Ad. 51 (ii) 8. is explained that a DNA marker test must confirm the declaration in the TQ, if not, a bio-assay should be performed.</i></p> <p><i>Ad. 58</i> <i>To read “Resistance to strain 0 to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate.” (and to delete last sentence on method of observation)</i> <i>Explanation: both a bio-assay and a DNA-marker test are always accepted. At Ad. 58 (ii) 8. is explained that a DNA marker test must confirm the declaration in the TQ, if not, a bio-assay should be performed.</i></p> <p><i>TWV: agreed</i></p>
<p>Ad. 51 (ii) Ad. 58 (ii) (Ad. 48 was deleted- see paragraph 62 of this document)</p>	<p>- to clarify “often” (does not meet requirements for use of gene-specific marker model) (e.g. in Ad. 48 (ii) to confirm whether under (ii) DNA marker test there are always resistance alleles present in Gene I2 to both race 0 (ex 1) and race 1 (ex 2).)</p> <p><i>Leading Expert:</i> <i>Ad. 51 (ii)</i> <i>To read “Resistance gene Tm2 gives resistance to ToMV. Gene Tm2 has two dominant resistance alleles: resistance allele Tm2 is always associated with resistance to strain 0 and 1, resistance allele Tm2² is always associated with resistance to strain 0, 1 and 2. The presence or absence of both resistance alleles can be detected by the co-dominant markers as described in Arens, P. et al (2010). Specific aspects:”</i></p> <p><i>Ad. 58 (ii)</i> <i>To read “Dominant resistance gene Sw-5 is always associated with resistance to TSWV strain 0. The presence or absence of the resistance allele can be detected by the co-dominant marker as described in Dianese, E.C. et al (2010). Specific aspects: ”</i></p> <p><i>TWV: agreed</i></p>

Ad. 48 (ii) 4.2	<p>to check whether to add control varieties as example varieties in the table of characteristics <i>Leading Expert: agreed</i> <i>In order to be coherent, Ad. 51 (ii) 4.2 and Ad. 58 (ii) 4.2 should be modified as follows</i> <i>Ad. 51 (ii) 4.2</i> <i>homozygous allele for susceptibility tm2 present: Mobaci, Monalbo, Moneymaker</i> <i>homozygous allele for resistance Tm2 present: Moperou</i> <i>homozygous allele for resistance Tm2² present: Mocimor, Momor</i> <i>51.1 strain 0, example varieties</i> <i>absent [1] Monalbo, Moneymaker</i> <i>present [9] Mobaci, Mocimor, Momor, Moperou</i> <i>51.2 strain 1, example varieties</i> <i>absent [1] Monalbo, Moneymaker</i> <i>present [9] Mocimor, Momor, Moperou</i> <i>51.3 strain 2, example varieties</i> <i>absent [1] Monalbo, Moneymaker, Moperou</i> <i>present [9] Mobaci, Mocimor, Momor</i></p> <p><i>Ad. 58 (ii) 4.2</i> <i>homozygous allele 1 for susceptibility present: Moneymaker</i> <i>homozygous allele 2 for susceptibility present: Mountain Magic</i> <i>homozygous allele for resistance present: Montealto</i> <i>heterozygous (allele for resistance and allele 1 for susceptibility present): Bodar</i> <i>58, example varieties</i> <i>absent [1] Montfavet H 63.5, Moneymaker, Mountain Magic</i> <i>present [9] Bodar, Montealto</i> <i>(Explanation: Lisboa is not available anymore)</i></p> <p><i>TWV: agreed, so to add extra example varieties to have controls and example varieties aligned between the characteristic and the method described in the Ad.</i></p>
Ad. 51 (i), 4. Footnotes	<p>to indicate e-mail and web address of the institutions instead of personal e-mail addresses <i>Leading Expert: to use matref@geves.fr and resistencias@inia.es</i> <i>TWV: agreed</i></p>
Ad. 51 (ii)	<p>Arens, P. et al (2010) to be added to 9. Literature <i>TWV: agreed</i></p>
Ad. 51 (ii) 2	<p>to clarify that there are 3 alleles: 2 dominant ones for resistance and 1 susceptible <i>Leading Expert: Tm2/2² (with two resistance alleles Tm2 and Tm2² and one susceptibility allele tm2)</i> <i>TWV: agreed</i></p>
Ad. 51 (ii) 3.2	<p>to read "Assay 2 to check susceptible or resistance allele <u>for susceptibility or resistance</u>" <i>TWV: agreed</i></p>
Ad. 51 (ii) 4.2	<p>to clarify allelic basis for resistance <i>Leading Expert: See above, Ad. 51 (ii), where was asked for the meaning of 'often'. Not to repeat at Ad. 51 (ii) 4.2.</i> <i>TWV: agreed</i></p>
Ad. 51 (ii) 8.	<p>to read "In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether the resistance is absent or present for the variety <u>is resistant</u> (on another mechanism <u>like</u> gene Tm1)." <i>TWV: agreed</i></p>
Ad. 51 (ii)	<p>Table on test results (below 8.): to delete "(occurs incidentally)" <i>TWV: agreed</i></p>
Ad. 58 (ii)	<p>Dianese, E.C. et al (2010) to be added to 9. Literature <i>TWV: agreed</i></p>
Ad. 58 (ii) 3.	<p>to read "Susceptible allele Allele for susceptibility Resistant allele Allele for resistance" <i>TWV: agreed</i></p>
Ad. 58 (ii) 8.	<p>to read "homozygous susceptible-susceptibility allele 1 present homozygous susceptible-susceptibility allele 2 present homozygous resistant resistance allele present." <i>TWV: agreed</i></p>

Ad. 58 (ii) 8.	to read "In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether the resistance is absent or present for the variety <u>is resistant</u> (on another mechanism)." <i>TWV: agreed</i>
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64. The TWV, at its fifty-first session, held in Roelofarendsveen, Netherlands, from July 3 to 7, 2017, had noted that, after adoption of the partial revision of the Test Guidelines for Tomato (see document [TC/53/27](#)), a need for clarification was identified with regard to the explanation Ad. 57 "Resistance to Tomato yellow leaf curl virus (TYLCV)", (i) agroinoculation method. The TWV had agreed to consider this issue during the discussions of the subsequent partial revisions for the Test Guidelines of Tomato (see document TWV/51/10) and the Test Guidelines of Tomato Rootstocks (see document TWV/51/11) (see document TWV/51/16 "Report", paragraph 95).

65. The TWV agreed the following with regard to the relevant items of the partial revision of Ad. 57 "Resistance to Tomato yellow leaf curl virus (TYLCV)":

Ad. 57 (i) 9.5	to read "Glasshouse or climatic chamber with permission to confined use of LMO/GMO, confinement level 1 (N-1)"
Ad. 57 (i) 9.9	to read "Permission to confined use of LMO/GMO, at least level 1 (N-1)"
Ad. 57 (i) 9.5, 9.9	to add disclaimer as footnote to read "The transformed <i>Agrobacterium tumefaciens</i> is a living modified organism (LMO; or genetically modified organism (GMO)) and in many countries it requires to comply with Cartagena Protocol on Biosafety in case of transboundary movement, transit, handling and use that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health."

Tomato rootstock

66. The TWV considered documents TWV/52/12 and TWV/52/19 and agreed that Characteristic and Ad. 24 "Resistance to *Fusarium oxysporum* f. sp. *lycopersici* (Fol)" be excluded from the partial revision as research is ongoing and be reconsidered by the TWV at its fifty-third session.

67. The TWV further agreed the following:

Chars. 27, 31	- to be kept as VG (VS not appropriate for DNA marker test, see TGP/9. In case of DNA markers, 20 plants are observed for uniformity. According to chapter 4.1.4 of TG/44/11 Rev., indication of VS is not appropriate.) <i>TWV: agreed</i> - DNA marker test to be presented to the BMT to check whether method corresponds to TGP/15 <i>Leading Expert: I will participate in the BMT and the item will be discussed. I will report to the TWV accordingly</i> <i>The TWV noted that the method corresponds to TGP/15 and that document TGP/15 would be revised to include a relevant example</i>
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<p>Ads. 27, 31 (Ad. 24 was deleted- see paragraph 66 of this document)</p>	<p>to clarify “often” (does not meet requirements for use of gene-specific marker model) (e.g. in Ad. 24 (ii) to confirm whether under (ii) DNA marker test there are always resistance alleles present in Gene I2 to both race 0 (ex 1) and race 1 (ex 2).)</p> <p><i>Leading Expert:</i> Ad. 27 (ii) To read “Resistance gene Tm2 gives resistance to ToMV. Gene Tm2 has two dominant resistance alleles: resistance allele Tm2 is always associated with resistance to strain 0 and 1, resistance allele Tm2² is always associated with resistance to strain 0, 1 and 2. The presence or absence of both resistance alleles can be detected by the co-dominant markers as described in Arens, P. et al (2010). Specific aspects: “</p> <p>Ad. 31 (ii) To read “Dominant resistance gene Sw-5 is always associated with resistance to TSWV strain 0. The presence or absence of the resistance allele can be detected by the co-dominant marker as described in Dianese, E.C. et al (2010). Specific aspects: ”</p> <p>TWV: agreed</p>
<p>Ad. 24 (ii) 4.2</p>	<p>to check whether to add control varieties as example varieties in the table of characteristics</p> <p><i>Leading Expert:</i> agreed In order to be coherent, Ad. 27 (ii) 4.2 and Ad. 31 (ii) 4.2 should be modified as follows: Ad. 27 (ii) 4.2 homozygous allele for susceptibility tm2 present: (<i>Solanum lycopersicum</i>) Moneymaker homozygous allele for resistance Tm2 present: (<i>Solanum lycopersicum</i>) Moperou homozygous allele for resistance Tm2² present: Emperador 27.1 strain 0, example varieties absent [1] present [9] Emperador 27.2 strain 1, example varieties absent [1] present [9] Emperador 27.3 strain 2, example varieties absent [1] present [9] Emperador</p> <p>Ad. 31 (ii) 4.2 homozygous allele 1 for susceptibility present: Emperador homozygous allele 2 for susceptibility present: (<i>Solanum lycopersicum</i>) Mountain Magic homozygous allele for resistance present: Enpower 31, example varieties absent [1] Emperador present [9] Enpower (Explanation: Big Power is not available anymore)</p> <p>TWV: agreed</p>
<p>Ad. 27 (i), 4. Footnotes</p>	<p>to indicate e-mail and web address of the institutions instead of personal e-mail addresses</p> <p><i>Leading Expert:</i> to use matref@geves.fr and resistencias@inia.es</p> <p>TWV: agreed</p>
<p>Ad. 27 (ii)</p>	<p>Arens, P. et al (2010) to be added to 9. Literature</p> <p>TWV: agreed</p>
<p>Ad. 27 (ii) 3.2</p>	<p>to read “Assay 2 to check susceptible or resistance allele <u>for susceptibility or resistance</u>”</p> <p>TWV: agreed</p>
<p>Ad. 27 (ii) 4.2</p>	<p>Are the control varieties homozygous for Tm2 and Tm2^{ls}?</p> <p><i>Leading Expert:</i> See the updated lists of control varieties and example varieties</p> <p>TWV: agreed.</p>
<p>Ad. 27 (ii) 8.</p>	<p>to read “In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether the resistance is absent or present for the variety <u>is resistant</u> (on another mechanism <u>like</u> gene Tm1).”</p> <p>TWV: agreed</p>
<p>Ad. 27 (ii)</p>	<p>Table on test results (below 8.): to delete “(occurs incidentally)”</p> <p>TWV: agreed</p>

Ad. 30 (i)	in footnotes 10, 11: to check whether to read "IHSM-UMA-CSIC" <i>Leading Expert: For both footnote 10 and 11 it is to read "IHSM-UMA-CSIC" (mentioned e-mailaddresses are correct)</i> <i>TWV: agreed</i>
Ad. 30 (i) (8.5)	to check wording of disclaimer. The use of a GMO as part of requirements for DUS examination must be worded according to internationally accepted terminology/Conventions concerning the transboundary movement of Living Modified Organisms and release of GMOs. Should be worded by relevant experts with experience implementing international regulations. <i>Leading Expert: proposal for the disclaimer to read "The transformed Agrobacterium tumefaciens is a living modified organism (LMO; or genetically modified organism (GMO)) and in many countries it requires to comply with Cartagena Protocol on Biosafety in case of transboundary movement, transit, handling and use that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health."</i> <i>To change OGM at 9.5 and 9.9 into LMO/GMO.</i> <i>TWV: agreed</i>
Ad. 31	to add explanation below title of Ad. 31 to read the same as other Ad. <i>Leading Expert: "Resistance to be tested in a bio-assay (method i) or in a DNA marker test (method ii), if appropriate."</i> <i>TWV: agreed</i>
Ad. 31 (ii)	Dianese, E.C. et al (2010) to be added to 9. Literature <i>TWV: agreed</i>
Ad. 31 (ii) 3.	to read "Susceptible allele Allele for susceptibility" "Resistant allele Allele for resistance" <i>TWV: agreed</i>
Ad. 31 (ii) 8.	to read "homozygous susceptible-susceptibility allele 1 present" "homozygous susceptible-susceptibility allele 2 present" "homozygous resistant resistance allele present:" <i>TWV: agreed</i>
Ad. 31 (ii) 8.	to read "In case the DNA marker test result does not confirm the declaration in the TQ, a bio-assay should be performed to observe whether the resistance is absent or present for the variety is resistant on another mechanism." <i>TWV: agreed</i>

Discussions on draft Test Guidelines

Fennel (Foeniculum vulgare Miller) (Revision)

68. The subgroup discussed document TG/183/4(proj.1), presented by Ms. Marian van Leeuwen (Netherlands), and agreed the following:

Cover page	- to update UPOV code FOENI_VUL according to GRIN - to create new UPOV codes for <i>Foeniculum vulgare</i> Mill. subsp. <i>vulgare</i> var. <i>dulce</i> (Mill.) Batt. and <i>Foeniculum vulgare</i> Mill. subsp. <i>vulgare</i> var. <i>azoricum</i> (Mill.) Thell. and add them to cover page (and Chapter 1.) - to add excluding bitter fennel to cover page
1.	- to delete "including..."
Char. 5	to be indicated as VG to read "sparse" instead of "open"
Char. 6	to delete MG
Char. 7	to be indicated as QL and VG
Char. 10	to have states and example varieties: absent or very weak (1): Rondo weak (2): Carmo, Donatello medium (3): Conero strong (4): Capo Rizzuto very strong (5)
Char. 11	to add example varieties (and confirm with Interested Experts)

Char. 15	to have states low (3), medium (5), high (7)
Char. 17	state 1 to read “rounded”
Char. 18	- to be combined with Char. 19 - to be indicated as PQ and VG - to have (*) - to have states whitish (1), light green (2), medium green (3), dark green (4) - to check example varieties (and confirm with Interested Experts)
Char. 20	to add explanation that the sheath is the lower part of the petiole which forms with other leaves the grumolo
Char. 22	to correct spelling of “Bolting” (capital B)
Char. 23	to correct spelling of “Time” (capital T)
Char. 27	to check whether really QL
Char. 28	to check if suitable as DUS characteristic
8.	- to create Chapter 8.1 with new explanation (a) to read “Observations should be made at harvest maturity” - to add (a) to Characteristics 3 to 21
8.1	to remove scales form all illustrations
Ad. 4	to improve illustration for state 5
Ads. 16, 17	to add explanation that observations should be made at the broadest part
Ad. 18	to be deleted (no illustration for color)
Ad. 27	- second sentence to read “Male sterile varieties show umbels with flowers without anthers or with anthers with no pollen - to delete photos
9.	to review format
TQ 6	to be completed

Lettuce (Lactuca sativa L.) (Partial revision: addition of 2 new Bremia lactucae races; adaptation of Bremia lactucae race names)

69. The subgroup discussed document TWV/52/4, presented by Ms. Marian van Leeuwen (Netherlands), on behalf of the Leading Expert, Ms. Amanda van Dijk (Netherlands) and agreed the following:

Chars. 38 to 50	to include “EU” throughout the Test Guidelines in relevant places to fit with the new International nomenclature (5.3, 8.2, TQ 5 and TQ 7)
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Pea (Pisum sativum L.) (Partial revision: Fusarium oxysporum f. sp. pisi)

70. The subgroup discussed document TWV/52/5, presented by Mr. Pascal Coquin (France), and agreed the following:

Char. 58	- to delete Characteristics 58.2 and 58.3 (races 5 and 6) - Characteristic 58.1 to become Characteristic 58
Ad. 58	- title to read “ <u>Ad. 58: Resistance to <i>Fusarium oxysporum</i> f. sp. <i>pisii</i> race 1 (Near wilt)</u> ” - to delete all references to races 5 and 6 (in 1., 4., 5., 9.3, last line of 11.2)
Ad. 58, 4.	- footnote 2 to use generic e-mail address resistencias@inia.es - footnote 3: to use generic e-mail address
Ad. 58, 6.	- to delete link, only keep general reference to ISF website - to replace table with the following: “Differential hosts: “susceptible: M410, Bartavelle, Little Marvel “resistant: New Era, Mini 93, Dark Skin Perfection, Vantage, WSU 23, New Season, WSU 31, 74SN5, Sundance II, Grant
Ad. 58, 8.8	second sentence to read “Viability of spores should be more than 3 years if stored at -20°C.”

Ad. 58, 11.2	<p>to read: “susceptible: “Class 2: Range from most of the plant wilted/dried but still alive, to plants brown and dead with stem collapsed. “resistant: “Class 0: no symptoms or equivalent to negative control, 1 or 2 wilted/dried lower leaves and slight reduction in growth compared to negative control of same variety are acceptable “Class 1: Range from a few chlorotic or wilted/dried leaves not present on, or more than on the negative control, up to many leaves with symptoms of senescence or wilting, some leaf drop, upper part of the plant still green and growing”</p>
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Spinach (Spinacia oleracea L.) (Partial revision: Characteristics 17, 18)

71. The subgroup discussed document TWV/52/6, presented by Ms. Marian van Leeuwen (Netherlands), and agreed that Characteristic 17 “Seed: spines (harvested seed)” be excluded from this partial revision as more clarification was needed and it should be included in the partial revision for Spinach for consideration by the TWV at its fifty-third session.

72. The subgroup further agree the following:

Ad. 18	<ul style="list-style-type: none"> - Evaluation of infection: second sentence: to replace (-) with (R) and to delete illustrations - to add “International Working Group on <i>Peronospora</i>” to abbreviation IWGP - to add “Near Isogenic Lines” to abbreviation NIL in table of differential varieties/NILs - below table of differential varieties/NILs: reference to ISF to read http://www.worldseed.org and to indicate that this website is the source of the table of differential varieties/NILs
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Swiss Chard, Leaf Beet (Beta vulgaris L. var. cicla L. (Ulrich)) (Revision)

73. The subgroup discussed document TG/106/5(proj.2), presented by Ms. Chrystelle Jouy (France), and agreed the following:

Cover page	<ul style="list-style-type: none"> - UPOV Code to be checked (see GRIN and GENIE) - Other associated document: to read TG/60
1.	to be updated
4.2.4	first sentence of last paragraph to read “However, for the Characteristics ‘Leaf blade:…’…”
4.2.6, 4.2.7	to be deleted
Char. 7	to read “ <u>Only varieties with Leaf blade: color: green:</u> Leaf blade: intensity of green”
Chars. 6, 8	<ul style="list-style-type: none"> - to read “<u>Only varieties with Leaf blade: color: green:</u> intensity of purple over color” - to be indicated as (b) - to have states “absent or very light”, “medium”, “dark”
Char. 8	<ul style="list-style-type: none"> - to be indicated as (b) - to have states “absent or very light”, “medium”, “dark”
Char. 9	to read “ <u>Only varieties with Leaf blade: color: purple:</u> Leaf blade: intensity of purple color”
Char. 11	to be indicated as (a)
Char. 15	to have states “absent or weak”, “medium”, “strong”
Char. 17	to be indicated as (b)
Char. 18	- to read “Bolting tendency” (information between brackets to be moved to Ad.18)
8.1 (b)	to correct spelling of “should”
Ad. 1	to read “Observations on the seedling should be made after the appearance of the second true leaf.”
Ad. 14	to read “Observations should be made at the broadest part of the petiole.”
TQ 4.	to be completed (as in currently adopted version TG/106/4)

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

74. The subgroup discussed document TG/37/11(proj.4), presented by Mr. Pascal Coquin (France), and agreed the following:

4.2.1	to add new standard wording paragraphs 4.2.2: "These Test Guidelines have been developed for the examination of [to be completed] varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed."
Char. 1	- to be indicated as VG/VS - growth stage to be indicated as 12-700
Char. 4	to read "apex" instead of "top"
Char. 11	to delete example variety "Vivant" from state 9
Char. 12	- to replace current example variety for state 7 with "Simax" - to add example variety "Ordes" to state 9
Char. 16	- to read "Root: degree of swelling" (to change throughout document) - state 1 to read "absent or weak" - to add "Simax" as example variety for state 1 - to add "Globo blanco de lugo" as example variety for state 2 (and delete "Vivant") - to add explanation observations should be made at the full development of the plants - to provide a definition of "swelling" - to explain varieties are grown for roots and some others for leaves (and sometimes both...)
Chars. 18, 19	- to check whether to combine and whether to add more states - if not combined, Char. 19 should have notes 1, 2, 3
Char. 21	to be indicated as QL
Char. 23	- to add illustration and review wording of states (according to TGP/14) - to delete example variety "Grellos de Santiago" from state 8
Char. 26	to refer to "broadest part" instead of "widest part"
Char. 29	- to add illustration (see TGP/14) and review to order of states of expression (for shape of apex) ("acute" to "truncate") - note scale: 1, 2, 3, 4, 5
Char. 31	- to read "Plant: number of sprouts" - state 1 to read "none or very few"
Char. 33	- to read "Petal: intensity of yellow color" - to have states "light", "medium", "dark"
New Char.	to check whether to add a new characteristic on anthocyanin coloration of leaf
8.1 (a)	to read "Observations should be made..."
Ad.1	- 1 st sentence: to delete "a number of" - 2 nd bullet point to delete "a" - last sentence to be added as the 4 th bullet point and to read "Flow cytometry (DNA quantification method)"
Ad. 5	to delete "unless otherwise indicated"
Ad. 27	to read "broadest" instead of "widest"
Ad. 28	- to improve illustration to have all stages - to use current illustration as (b) for Char. 28 and 29
Ad. 31	to replace pictures with drawings
9.	to review alphabetical order

Watercress

75. The subgroup discussed document TG/NASTU(proj.3), presented by Mr. Tom Christie (United Kingdom), and agreed the following:

1.2	to be moved to Chapter 6.4
4.1.4	to delete paragraphs second and last paragraph

6.4	to add “ <i>Nasturtium microphyllum</i> Boenn. ex Rchb. differs from <i>Nasturtium officinale</i> R. Br. in having a uniseriate arrangement of seeds compared to a biseriate arrangement for <i>N. officinale</i> . “The different species are indicated in the table of characteristics.”
6.5	to add: (m) <i>Nasturtium microphyllum</i> (o) <i>Nasturtium officinale</i>
Table of Chars.	to add indication of species to each example variety
Char. 1	- to delete (b) and (c) - to have notes 1, 2, 3
Char. 3	to have notes 1, 2, 3
Char. 4	to have notes 1, 3, 5
Char. 5	- to have notes 1, 2, 3 - to add an example variety
Char. 6	to add an example variety
Char. 7	to have notes 1, 3, 5
Char. 8	- to have notes 1, 2, 3 - to read “Stem: number of aerial roots”
Char. 9	to have notes 1, 2, 3
Char. 10	to have notes 1, 2, 3
Char. 11	- to delete (*) - to add explanation (see TGP/14)
Chars. 12, 13	to have notes 1, 2, 3
Char. 14	- to have notes 1, 2, 3 - to add an example variety
Char. 15	- to have notes 1, 2, 3 - state 1 to read “absent or weak”
Char. 16	to have notes 1, 3, 5
Char. 17	to have notes 1, 2, 3
Char. 18	- state 3 to read “narrow elliptic” - state 5 to read “circular”
Char. 21	- to delete (*) - to have notes 1, 2, 3
Char. 22	to have notes 1, 3, 5
Char. 23	to read “Number of plants with flowers”
Char. 24	- to have notes 1, 2, 3 - to add an example variety
Char. 25	- to have notes 1, 2, 3 - to delete (*) - to add an example variety
Char. 26	to have notes 1, 3, 5
Char. 27	to have notes 1, 3, 5 to add example varieties “Sophie” for state 5 and “Emerald” for state 7
Ad. 3	to delete current illustration and have one photo per state of expression
Ad. 8	to add arrow to indicate aerial roots
Ad. 22	to read “... when 10% of the plants in a plot have at least one fully open flower.”
Ad. 23	to be deleted
9.	to review format

Watermelon (Citrullus lanatus (Thunb.) Matsum. et Nakai) (Partial revision: explanations for seed characteristics 34, 35, 36)

76. The subgroup discussed document TWV/52/7, presented by Ms. Marian van Leeuwen (Netherlands), and agreed the following:

Char. 36	to be indicated as QL
Ad. 34	- to add sentence to read "Observations should be made excluding black seeds." - to delete picture of black seed from state 1
Ad. 36	- to add sentence to read "Observations should be made excluding black seeds." - to delete picture of black seed from state 1

Survey on approaches for obtaining plant material from breeders and on deciding on varieties whose existence is a matter of common knowledge

77. The TWV considered document [TWP/2/13](#) and noted the results of a survey on the approaches used by members of the Union for obtaining plant material from breeders and on deciding on varieties whose existence is a matter of common knowledge.

78. The TWV noted that the results of the survey would be considered by the TC at its session in 2018.

79. The TWV agreed that it would be useful to send a reminder to the Circular E-18/016 "UPOV Survey: Approaches on Plant Material and Common Knowledge" sent on March 6, 2018, as some participants in the TWV had not been informed about this survey and would be willing to contribute to complete the result of the survey.

80. The TWV noted the comment made by the representatives of Crop Life International, ESA and ISF that the first set of results from this survey reflects rather a positive and good cooperation between PVP Offices and breeders. However, it was clarified that breeders might not be in a position to share plant materials for the following reasons:

- Release of parental lines, especially non-protected or in members where it is not protected,
- Difficulties to provide seed, if the requested variety is neither protected nor registered in the given territory
- Request for the full portfolio of varieties,
- Unavailability of untreated seeds (chemical treatment or primed seeds).

Variety denominations

81. The TWV considered document [TWP/2/6](#).

82. The TWV noted the developments concerning a possible revision of document UPOV/INF/12 "Explanatory Notes on Variety Denominations under the UPOV Convention", as set out in paragraphs 6 to 10 of document TWP/2/6.

83. The TWV noted the developments concerning a UPOV similarity search tool for variety denomination purposes, as set out in paragraph 12 of document TWP/2/6.

84. The TWV noted developments concerning the possible expansion of the content of the PLUTO Database, as set out in paragraph 14 of document TWP/2/6.

85. The TWV noted developments concerning non acceptable terms, as set out in paragraph 16 of document TWP/2/6.

86. The TWV noted that the fifth meeting of the WG-DEN would be held in Geneva, on October 30, 2018.

87. The TWV noted the draft agenda of the fifth meeting of the WG-DEN, as set out in paragraph 18 of document TWP/2/6.

Information and databases

(a) *UPOV information databases*

88. The TWV considered document [TWP/2/4 Rev.](#).

GENIE database

89. The TWV noted that 440 new UPOV codes had been created in 2017 and a total of 8,589 UPOV codes were included in the GENIE database.

90. The TWV noted that European Commission Directorate General SANTE (DG SANTE) had proposed the establishment of an administrative arrangement between the Office of the Union and the European Commission to cover collaboration in scientific names of plant species present in each other's databases and, in particular, regarding the attribution of UPOV codes to plant species in the Forest Reproductive Material Information System (FOREMATIS).

91. The TWV noted the invitation to submit comments on Annex V, 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 March 31, 2019.

92. The TWV considered the proposal to amend UPOV codes for *Brassica oleracea* with the consequent changes to the UPOV codes, as set out in Annex II to document TWP/2/4 Rev., and the revision of the Section 2.3 of the "Guide to the UPOV Code System", as set out in Annex III to document TWP/2/4 Rev.

93. The TWV considered the proposal to allocate the UPOV code BRASS_OLE to the hybrids between *Brassica oleracea* L. var. *acephala* and *Brassica oleracea* L. var. *botrytis*, as set out in paragraph 42 of document TWP/2/4 Rev..

94. The TWV noted the comment made by the TWA on the proposal to amend codes for ZEAAA, as set out in paragraph 23 of document TWP/2/4 Rev., and agreed with the TWA that the information on the type of maize varieties (popcorn, sweet corn) was useful for the grouping of varieties and organization of the growing trials. The TWV noted that the TWA had agreed that information on the type of maize varieties should remain in the database and should continue to be provided by data contributors. The TWV further agreed that the same approach should be followed for Brassica with regard to red and white cabbage.

95. The TWV agreed with the proposal to amend UPOV Codes for *Epichloe* species and *Neotyphodium species*, as set out in paragraphs 46 and 47 of this document.

PLUTO database

96. The TWV noted the summary of contributions to the PLUTO database from 2014 to 2017 and the current situation of members of the Union on data contribution, as presented in the Annex IV to document TWP/2/4 Rev.

97. The TWV noted that the WG-DEN, at its fourth meeting, held in Geneva on October 27, 2017, had agreed that matters under agenda item 5 "Expansion of the content of the PLUTO database" would be considered at a later meeting.

(b) *Variety description databases*

98. The TWV considered document [TWP/2/2](#) and noted the developments reported in this document.

99. The TWV received a presentations on databases in the European Union by an expert from the European Union. A copy of the presentation is provided in document [TWV/52/16](#).

(c) *Exchange and use of software and equipment*

100. The TWV considered document [TWP/2/5](#).

Document UPOV/INF/16 “Exchangeable Software”

101. The TWV noted that the Council, at its fifty-first ordinary session, held in Geneva, on October 26, 2017, had adopted document UPOV/INF/16/7 “Exchangeable Software”.

102. The TWV noted that the Office of the Union had issued circular E-18/042, 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.

Document UPOV/INF/22 “Software and Equipment Used by Members of the Union”

103. The TWV noted the Council, at its fifty-first ordinary session, held in Geneva, on October 26, 2017, had adopted document UPOV/INF/22/4 “Software and equipment used by members of the Union”.

104. The TWV noted the Office of the Union had issued circular E-18/042, inviting the designated persons of the members of the Union in the TC to provide or update information for document UPOV/INF/22.

105. The TWV noted the comment made by the representative from Crop Life International on the willingness of the members of Crop Life International to share their experiences on the use of any new software and equipment which might be relevant for DUS examination.

(d) *Electronic application systems*

106. The TWV considered document [TWP/2/3](#) and received a presentation by the Office of the Union on UPOV PRISMA, a copy of which would be provided as an Addendum to document TWP/2/3. The TWV noted the developments concerning UPOV PRISMA.

107. The TWV received the following presentations, copies of which are provided in document [TWV/52/17](#):

- Presentation on “Update on electronic application systems” by an expert from the European Union
- Presentation on “EAS – PVPO Brazil CultivarWeb” by an expert from Brazil

Recommendations on draft Test Guidelines

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

108. 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) (2018)
Lettuce (<i>Lactuca sativa</i> L.) (Partial revision: addition of 2 new <i>Bremia lactucae</i> races; adaptation of <i>Bremia lactucae</i> race names)	TG/13/10 Rev. 2, TWV/52/4
Pea (<i>Pisum sativum</i> L.) (Partial revision: disease resistance explanation for <i>Fusarium oxysporum</i> f. sp. <i>pisi</i> race 1 (Ad. 58))	TG/7/10 Rev., TWV/52/5
*Fennel (<i>Foeniculum vulgare</i> Miller) (Revision)	TG/183/4(proj.1)
Spinach (<i>Spinacia oleracea</i> L.) (Partial revision: Characteristic 18)	TG/55/7 Rev. 4, TWV/52/6
*Swiss Chard, Leaf Beet (<i>Beta vulgaris</i> L. ssp. <i>vulgaris</i> var. <i>flavescens</i> DC. f. <i>crispa</i>) (Revision)	TG/106/5(proj.2)
Watercress (<i>Nasturtium microphyllum</i> Boenn. ex Rchb.; <i>Nasturtium officinale</i> R. Br.; <i>Nasturtium xsterile</i> (Airy Shaw) Oefelein)	TG/NASTU(proj.3)
Watermelon (<i>Citrullus lanatus</i> (Thunb.) Matsum. et Nakai) (Partial revision: explanations for seed characteristics 34, 35, 36)	TG/142/5, TWV/52/7

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

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

Subject
Mizuna (<i>Brassica rapa</i> L. subsp. <i>nipposinica</i> (L. H. Bailey) Hanelt)
Chick-pea (<i>Cicer arietinum</i> L.)
Curly Kale (<i>Brassica oleracea</i> L. var. <i>sabellica</i> L.)
Melon (<i>Cucumis melo</i> L.) (Partial revision: Char. 75 "Resistance to Melon necrotic spot virus (MNSV) E8 strain")
Lettuce (<i>Lactuca sativa</i> L.) (Partial revision: addition of new <i>Bremia lactucae</i> race(s))
Pepper (<i>Capsicum annuum</i> L.) (Revision)
Spinach (<i>Spinacia oleracea</i> L.) (Partial revision: Characteristics 17, 18)
Squash (Partial revision: to add new Characteristic "Resistance to ZYMV")
Tomato (<i>Solanum lycopersicum</i> L.) (Partial revision: Chars. and Ads. 48 and 53)
Tomato rootstock (Partial revision: Chars. and Ads. 24 and Ad. 28)
*Turnip (<i>Brassica rapa</i> L. var. <i>rapa</i> L.) (Revision)

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

Date and place of the next session

111. At the invitation of the Republic of Korea, the TWV agreed to hold its fifty-third session in the Republic of Korea (place to be confirmed), from May 19 to 24, 2019, with the preparatory workshop on the afternoon of May 19, 2019.

Future program

112. 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) Electronic application systems (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 France, Italy, the Netherlands, ESA, ISF)

11. Matters to be resolved concerning Test Guidelines adopted 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

113. On the afternoon of September 19, 2018, the TWV visited the Institute of Vegetables and Flowers (IVF) of the Chinese Academy of Agricultural Sciences. The TWV visited breeding trials for cabbage and cucumber as well as the disease resistance testing facilities of the IVF. The TWV received a presentation by Ms. Lei Li, Deputy Director, Scientific Management Division, Chinese Academy of Agricultural Sciences, introducing the Institute of Vegetables and Flowers to the TWV participants. The TWV also received a presentation by Mr. Kun Yang, Associate Researcher, Beijing Sub-center for New Plant Variety Tests, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, introducing the Beijing Sub-Center for New Plant Variety Tests. Copies of these presentations are provided in Annex IV to this document.

[Annexes follow]

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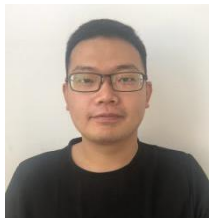
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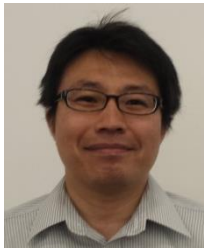


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ANNEX II

WELCOME ADDRESS BY MR. ZHU YAN, DEPUTY DIRECTOR-GENERAL, DEVELOPMENT CENTER OF SCIENCE AND TECHNOLOGY, MINISTRY OF AGRICULTURE AND RURAL AFFAIRS

Distinguished Ms. Romana Bravi, Mr. Ben Rivoire,
Distinguished guests, Ladies and Gentlemen,
Good afternoon!

First, please allow me to extend a warm welcome to all of you who come here to participate in the UPOV's 52nd session of the Technical Working Party for Vegetables (TWV). In 2009, the 43rd TWV session was also held in Beijing. At present here today are not only old friends but also more new friends. I, on behalf of the Development Center for Science and Technology and the Test Center for New Varieties of Plants, Ministry of Agriculture and Rural Affairs, would like to warmly and sincerely welcome again all the present delegates of the UPOV members to Beijing!

This session was organized by Beijing Test Sub-Center for New Varieties of Plants, Ministry of Agriculture and Rural Affairs. There are a total of 26 Sub-Centers and some test stations that are distributed all over China, responsible for DUS test of agricultural plant varieties. These test centers and stations, constituting the DUS test system of plant varieties of agricultural crops, vegetables, ornamentals and fruits in China, provide the technical support for the protection and management of new varieties of plants in China and have made a remarkable contribution to it.

Great importance is attached to technology development. So far, the DUS test guidelines to more than 200 plant varieties, molecular identification standards for 18 genera or species and a large number of DUS testing manuals have been developed. Technical exchanges are encouraged and many domestic and international training courses are opened every year. Last week, we just opened a successful international training course in Shanghai in which several experts present here gave wonderful lectures to our Chinese examiners. This TWV session is another good opportunity for exchanges. We hope that it will promote the mutual learning and exchanges of vegetable testing experts from various countries. In particular, foreign experts are expected to introduce your valuable experience and skills to our Chinese counterparts so as to jointly promote the development of vegetable DUS testing technology.

In the following week, experts will discuss many technical issues and the schedule will be very tight. I really appreciate all efforts made by the office of the Union to make this happen.

I believe that the agendas of this session will achieve the expected results and turn out to be rewarding. It is strongly recommended that you experts set some time aside from this busy schedule to feel the charm of Beijing, a city with a long history and modern style, which is the most beautiful in the autumn.

Thank you all!

WELCOME ADDRESS BY MR. SUN HAOQIN, ASSOCIATE COUNSEL, DEPARTMENT OF SEED
INDUSTRY MANAGEMENT, MINISTRY OF AGRICULTURE AND RURAL AFFAIRS

Distinguished Ms. Romana Bravi, Mr. Ben Rivoire,
Distinguished guests, Ladies and Gentlemen,
Good afternoon!

First of all, I, on behalf of the Department of Seed Industry Management and the Office of Protection of New Varieties of Plants, the Ministry of Agriculture and Rural Affairs (MARA), would like to warmly welcome the delegates of the UPOV members to Beijing! Heartfelt thanks shall also go to the organizers of this session, including the Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, and Beijing DUS Test Sub-Center for New Varieties of Plants and the Development Center for Science and Technology, Ministry of Agriculture and Rural Affairs, for their elaborate preparation.

Autumn is the most beautiful season in Beijing and the season for fruit and vegetable harvest. It is exactly the right time to hold UPOV's 52nd TWV session in such a wonderful season. After joining UPOV in 1999, China has attached great importance to the protection of new varieties of plants, and the protection of new varieties has thrived as well. In 2017, the number of applications for protection of plant new varieties, MARA in China reached 3,842, ranking first among UPOV members. Among these applications, there were 546 on vegetables, more than twice the number in 2016. Up to now, MARA has issued 10 batches of botanical lists of protection of plant new varieties, on which there have been 138 genera or species being protected, including 44 on vegetables, accounting for the highest proportion. It also fully demonstrates that an increasing number of vegetable breeders are more aware of the importance of the protection of new varieties. Today, the concept of strengthening intellectual property protection has been deeply rooted in China, and it is gradually becoming the consensus of all parties that "only by strengthening the protection of new varieties can the breeding innovation be better promoted".

In order to meet the requirements of reform and opening up and market-oriented development, the Ministry of Agriculture and Rural Affairs has been recently deepening the institutional reforms. The Department of Seed Industry Management, as the newly-founded department, has added the functions related to the livestock and poultry seed industry on the basis of the previous crop seed management, and further strengthened its staffing and internal organizational structure, which fully reflects China's great attention to the seed industry and to the protection of new varieties of plants.

To create a better future, we hope that this session can facilitate the technology exchanges, experience sharing and cooperation among UPOV members so as to jointly promote the healthy development of the protection of new varieties of plants! General Secretary Xi Jinping emphasized on many international occasions that China's door will not be closed but opened in a wider level. It is strongly supported that delegates of various countries actively publicize the protection system and achievements of China's new varieties of plants. Your suggestions on China's protection work of new varieties of plants are also warmly welcomed. You are expected to introduce more and better new foreign varieties to Chinese market and recommend new or good Chinese varieties to other countries, thus making greater contributions to the global agricultural development!

May we all be blessed with longevity. Though far apart, we are still able to share the beauty of the moon together. This is a famous poem by Su Shi, one of the eight great men of letters of Tang and Song Dynasties. Next Monday will be one of Chinese important traditional festivals - Mid-Autumn Festival. It is a festival for Chinese people to be reunited with their families, to worship the moon and to taste moon cakes. Of course, the fruits and vegetables of autumn will be essential as well. I sincerely hope that everyone can have a good week in Beijing and feel the more festive atmosphere on this holiday; I even hope that you can spend more days in a more open China and have an unforgettable Mid-Autumn Festival.

Finally, I wish this session a complete success and all delegates good health and good luck in Beijing!


Thank you all!

[Annex III follows]



PRESENTATION BY MR. YEHAN CUI, DIRECTOR, DIVISION CHIEF,
DIVISION OF PROTECTION OF NEW VARIETIES OF PLANTS, DEVELOPMENT CENTER OF SCIENCE
AND TECHNOLOGY, MINISTRY OF AGRICULTURE AND RURAL AFFAIRS




PVP and DUS testing in China



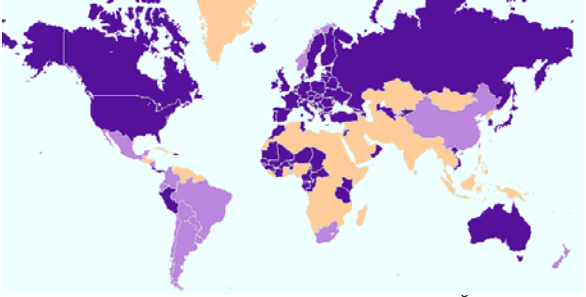
PVP DUS testing Vegetable crops




PVP in China



April 23, 1999, 39th UPOV member,
1978 act



1991 Act
Other Acts



Legal framework

Regulations Enacted and enter into force on March 20, 1997 . Amended on March 1, 2013	Seed law Amended on 4th Nov. 2015 and enter into force on January 1, 2016
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Regulations of the People's
of China on the Protection
of New Varieties of Plants

Seed Law of the People's
Republic of China





Authorities

Agricultural part:
PVP office of **Ministry of Agriculture and Rural Affairs**
Agricultural plants



Forestry part:
PVP office of **State Forestry and Grassland
Administration**
Forestry plants



Protected plants

Agricultural part:

10 lists
138 agricultural genera and species

The 11th list on going 100+

A full list @ http://www.nybjfjzx.cn/p_pzbh/sub_lb.aspx?n=41

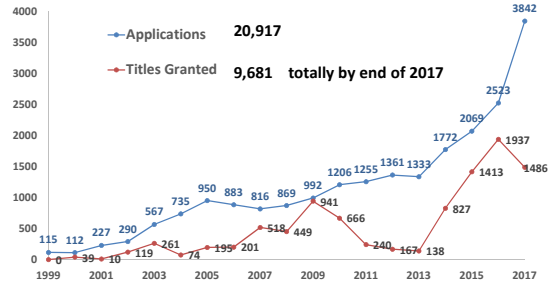
Forestry part:

6 lists
206 forestry genera and species

A full list @ <http://www.cnpp.net/root/icataview.aspx?id=24>



Applications/Title granted (Agricultural plants)



Stop charging the PVP fees since Apr. 1, 2017



Top10 UPOV members in Applications

Rank	2007		2015		2016	
	Member	App.#	Member	App.#	Member	App.#
1	European Union	2'968	European Union	3'111	European Union	3'299
2	United States of America	1'485	China ↑3	2'342	China	2'923
3	Japan	1'406	United States of America ↓1	1'634	United States of America	1'604
4	Russian Federation	885	Ukraine ↑3	1'075	Ukraine	1'274
5	China	877	Japan ↓2	914	Japan	977
6	Netherlands	846	Netherlands	799	Republic of Korea ↑1	966
7	Ukraine	560	Republic of Korea ↑1	757	Netherlands ↓1	804
8	Republic of Korea	527	Russian Federation ↓4	743	Russian Federation	772
9	Canada	430	Australia ↑1	359	Australia	387
10	Australia	336	Brazil ↑3	355	Brazil	326

Table from UPOV



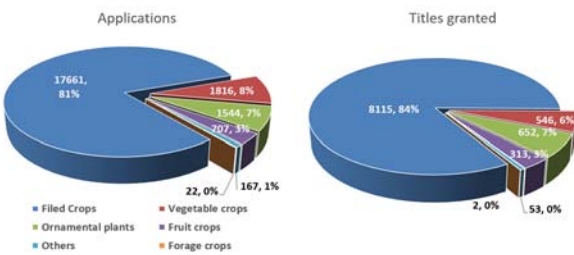
Top10 UPOV members in Titles granted

Rank	2007		2015		2016	
	Member	Titl.#	Member	Titl.#	Member	Titl.#
1	European Union	2'608	European Union	2'844	European Union	2'980
2	United States of America	1'374	United States of America	1'595	China ↑1	2'132
3	Japan	1'338	China ↑1	1'589	United States of America ↓1	1'703
4	China	596	Ukraine ↑1	946	Japan ↑1	941
5	Ukraine	555	Japan ↓2	847	Republic of Korea ↑1	834
6	Canada	442	Republic of Korea ↑2	619	Russian Federation ↑2	592
7	Russian Federation	431	Netherlands ↑2	613	Netherlands	588
8	Republic of Korea	424	Russian Federation ↓1	544	Brazil ↑1	301
9	Netherlands	366	Brazil ↑3	266	South Africa ↑1	247
10	South Africa	225	South Africa	233	Canada ↑1	239

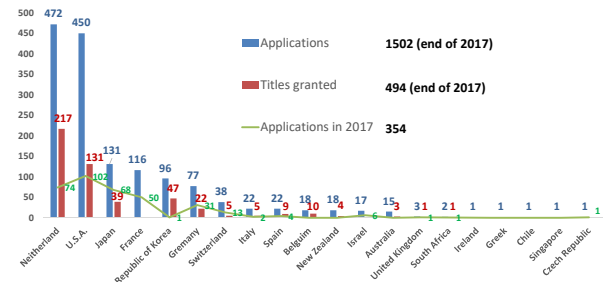
Table from UPOV



Applications/Titles granted by crop types (Agricultural plants, end of 2017)



Applications/Title granted from/by non-residents (Agricultural plants, end of 2017)



non-residents : residents
1502:20917
(7.2%)

Welcome to make an application in China !



Online application system (Agricultural plants)

<http://www.online.cnvp.cn/>

DUS testing in China

Requirements of PVP

DUS examination: Official test (mainly used)
On site investigation (mainly fruit crops)
Document exam (rarely used)

Official test

More than 8,000 tests are conducted per year

On-site investigation

~100 varieties per year

DUS testing system

Present: 1 headquarter+27 sub-centers+3 stations
Goal in 2020: 1 headquarter+29 sub-centers+28 stations
Mainly based on the agricultural institute or university

Team



A professional DUS testing team with more than 200 well-trained experts.



Environment



Well-equipped and independent test sub-centers/stations



DUS Guidance



200+ DUS Test Guidelines

18 Protocols for identification of varieties (SSR/SNP/InDel)

DUS textbook for college student and graduate student

Protocols/Manuals for DUS test/ photo-taking

Translation version of UPOV TGP documents



The DUS Testing Center, MOA

Certified as a "China Accredited Seed Laboratory".



GMO detection (5 "Main Crops" in China)



Variety identification



A well-equipped and modern DUS test center laboratory that will facilitate DUS testing



ABI 3730 DNA analyzer

LGC SNP line

Affymetrix Gene Titan



Ion S5XL Sequencing

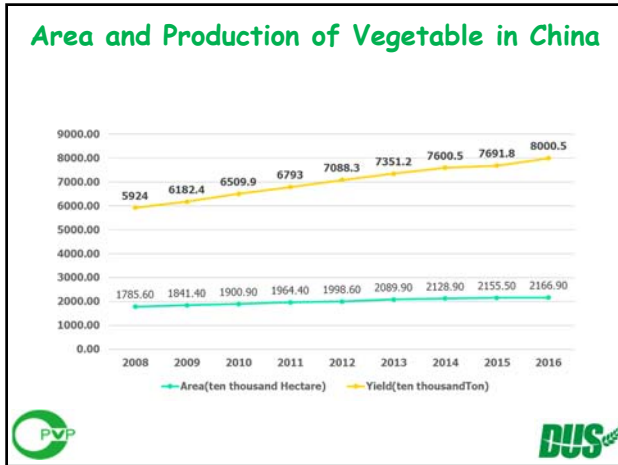
LabChip GX Touch

ABI QuantStudio 7 Flex



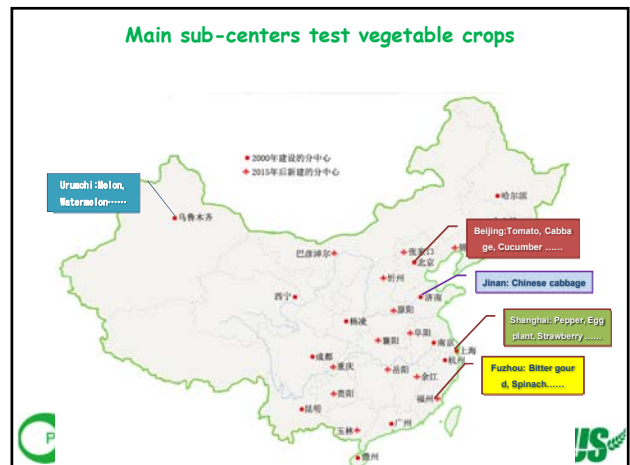
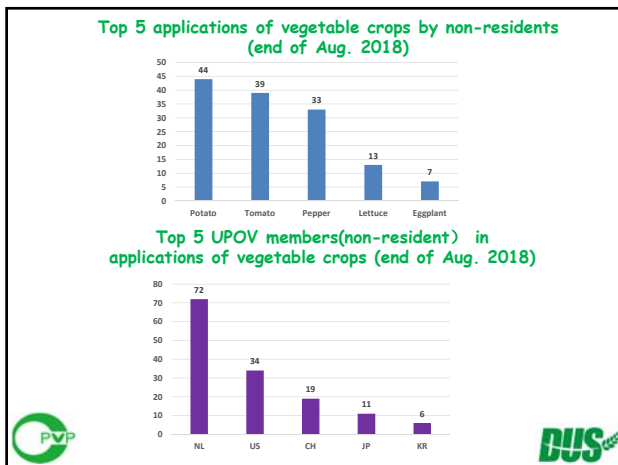
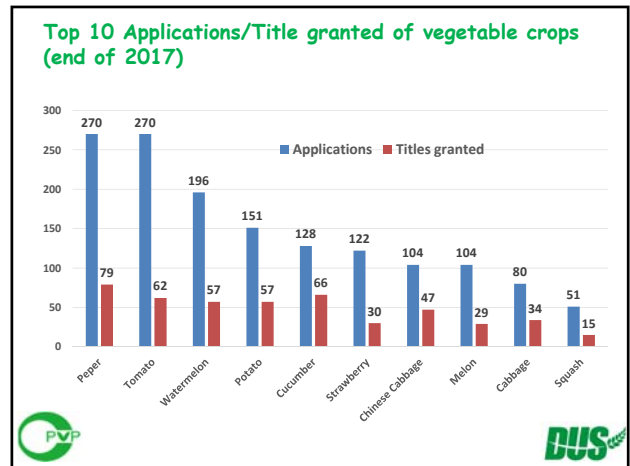
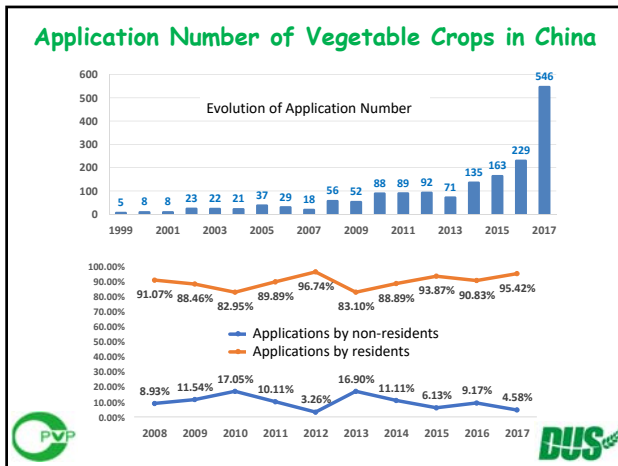
PVP and DUS testing of Vegetable crops





Protected Vegetable Crops in China

1	Chinese cabbage	Brassica campestris L. ssp. pekinensis (Lour.) Oison	23	mustard	Brassica Juncea(L.) Czern.et coss
2	tomato	Lycopersicon esculentum Mill.	24	Chinese kale	Brassica alboglabra Bailey L.
3	cucumber	Cucumis sativum L.	25	Lettuce	Lactuca sativa L.
4	pepper	Capsicum L.	26	Bitter melon	Momordica charantia L.
5	water melon	Citrullus lanatus (Thunb.) Matsum et Nakai	27	Wax gourd	Benincasa hispida Cogn.
6	White Cabbage	Brassica oleracea L. var. capitata (L.) Alef. var. alata DC.	28	Spinach	Spinacia oleracea L.
7	radish	longipinnatus Bailey & Raphanus sativus L. var. radiculosus Pers.	29		Cucurbita moschata Duch.
8	eggplant	Raphanus sativus L. var.	30	Pumpkin	Luffa Mil.
9	pea	Pisum sativum L.	31	Broccoli	Brassica oleracea L. var. italica Plenck
10	Welsh Onion	Allium fistulosum L.	32	Onion	Allium Cepa L.
11	Zucchini	Cucurbita pepo L.	33	Ginger	Zingiber officinale Rosc.
12	Cauliflower	Brassica oleracea L. var. botrytis L.	34	Water-bamboo	Zizania latifolia (Griseb.) Turcz. ex Stapf.
13	Celery	Apium graveolens L.	35	Asparagus	Asparagus officinalis L.
14	carrots	Daucus carota L.	36		Dioscorea alata L.; Dioscorea polystachya Turcz.; Dioscorea japonica Thunb.
15	White Ferula Mushroom	Pleurotus nebrodensis (Inzenga) Quéf.	37	Chinese yam	Abelmoschus esculentus (L.) Moench
16	Melon	Cucumis melo L.	38	Okra	Abelmoschus esculentus (L.) Moench
17	strawberry	Fragaria ananassa Duch.	39	Toadstool	Marichella Dill. ex Pers.
18	French Bean	Phaseolus vulgaris L.	40	Mushroom	Lentinula edodes (Berk.) Pegler
19	Cowpea	Vigna unguiculata (L.) Walp.	41	Black Fungus	Auricularia heimuer F.Wu, B.K. Cui & Y.C. Dai
20	Garlic	Allium sativum L.	42	Lucid Ganoderma	Ganoderma P. Karst.
21	non-heading Chinese cabbage	Brassica campestris ssp. chinensis	43	white mushroom	Agaricus bisporus (J.E. Lange) Imbach
22	Lotus	Nelumbo nucifera Gaertn.		Artichoke	Helianthus tuberosus L.




PRESENTATION BY MS. LEI LI, DEPUTY DIRECTOR, SCIENTIFIC MANAGEMENT
DIVISION, CHINESE ACADEMY OF AGRICULTURAL SCIENCES



IVF CAAS
Institute of Vegetables and Flowers
Chinese Academy of Agricultural Sciences


Welcome to IVF, CAAS!

Beijing, China




Introduction

- **Foundation: 1958**
- **The only national nonprofit professional research organization in the field of vegetable and floral crops.**
- **National academic center for vegetable and flower research in China. Over 200 staffs, of which 79 with doctorates, 32 Principle Investigators.**

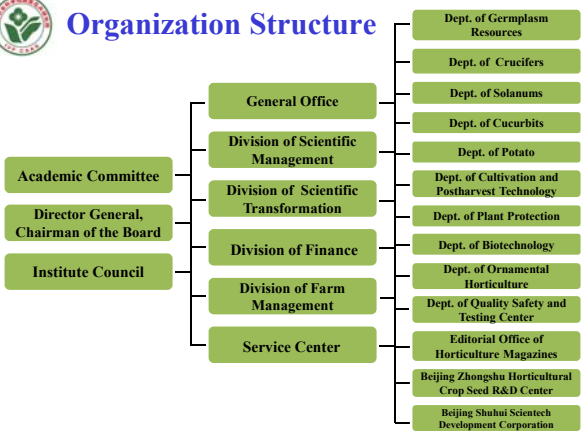


Mission


- ✓ **Make fundamental discoveries in the science of Vegetables and Flowers.**
- ✓ **Build on fundamental scientific research and deliver science solutions that improve vegetable and flower quality and yields.**
- ✓ **Provide an outstanding training environment that prepares scientists who pass through the Institute to excel in their careers.**




Organization Structure



- Academic Committee
- Director General, Chairman of the Board
- Institute Council
- General Office
- Division of Scientific Management
- Division of Scientific Transformation
- Division of Finance
- Division of Farm Management
- Service Center
- Dept. of Germplasm Resources
- Dept. of Crucifers
- Dept. of Solanums
- Dept. of Cucurbits
- Dept. of Potato
- Dept. of Cultivation and Postharvest Technology
- Dept. of Plant Protection
- Dept. of Biotechnology
- Dept. of Ornamental Horticulture
- Dept. of Quality Safety and Testing Center
- Editorial Office of Horticulture Magazines
- Beijing Zhongshu Horticultural Crop Seed R&D Center
- Beijing Shuhui Sciencetech Development Corporation



Dept. of Germplasm Resources



National Field Genebank and *In-vitro* Genebank of Vegetative Propagated Vegetables Germplasm Resources (Beijing, China)

National Mid-term GeneBank for Vegetative Propagated Vegetables (Beijing, China)




Dept. of Germplasm Resources



Dept. of Crucifers

Genetics and Breeding of Cabbage and Broccoli



Zhonggan 17 Zhonggan 18 Zhonggan 19
 Zhonggan 21 Zhongqing 8

New hybrids including 25 cabbage and 6 broccoli hybrids were developed.

Cabbage varieties provided by our institute occupy over 50% of the total cabbage growing area in China.

Dept. of Crucifers

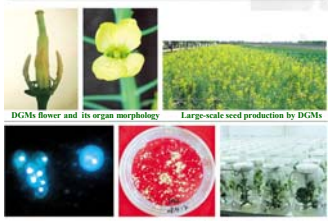
A natural cabbage genic male sterile material DGMS79-399-3 was firstly discovered, applied in hybrid seed production both domestic and abroad. The research utilization made a breakthrough progress, won the second prize of National Science and Technology Progress in 2014.




世界首例发现的甘蓝雄性不育材料

Dept. of Crucifers

Genetics and Breeding of Cabbage and Broccoli



DGMS flower and its organ morphology Large-scale seed production by DGMS
 DH lines


The Dominant Genic Male Sterile (DGMS) 79-399-3 in cabbage was first discovered by the cabbage breeding group.

Dominant male sterility gene and RAPD, AFLP and SSR Markers linked to TuMV resistant gene have been obtained.

Significant progress has been made in microspore culture and a large number of DH lines were obtained and some of them were used in cross combination.

Dept. of Crucifers

Genetics & Breeding of Chinese Cabbage



Zhongbai 60 Zhongbai 62
 Zhongbai 81 Zhongbai 76

16 new cabbage hybrids with characteristics of good Quality, high yield and disease resistance have been developed.

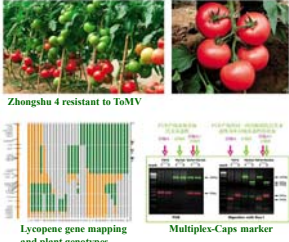
A system of accelerating breeding cycle of Chinese cabbage was set up using microspore culture, and a large number of DH lines was obtained.

The SCAR marker linked to dominant genic male sterility gene was discovered successfully, and fine mapping of the dominant genic male sterility gene was completed.

SCAR marker

Dept. of Solunums

Fresh Tomato Genetics and Breeding




Zhongshu 4 resistant to ToMV
 Lycopene gene mapping and plant genotypes recombinant analysis
 Multiplex-Caps marker

Gene pyramiding technology by molecular marker was established and parent materials resistant to virus diseases, leaf mold, fusarium wilt and root-knot nematode were obtained.

Dept. of Solunums

Pepper Genetics and Breeding



Zhongjiao 6 Zhongjiao 7
 Zhongjiao 8

Pepper genetics and breeding group is one of the first units carrying out pepper breeding in China and some sweet and hot pepper hybrids have been developed.

QTL mapping for Fertility Restorer

Dept. of Solunums

Eggplant Genetics and Breeding

Yuanza 16 Parthenocarpic fruit

Changza 8 Isolated microspore culture

➤ Protoplast electrofusion technology system to obtain interspecific somatic fusion hybrid of eggplant was established.

➤ Embryoid induction and plant regeneration of eggplant through microspore culture is a breakthrough in eggplant haploid breeding.

Dept. of Solunums

Processed tomato genetics and breeding

QTL mapping of late blight, grey mould and salt resistance

➤ Early and late maturing hybrids such as Hongza 35, IVF6210 were developed.

➤ These varieties showed resistance to cracking, good firmness, storability, high soluble solids and lycopene contents. They are also resistance to Verticillium wilt, Fusarium wilt, TMV and early blight etc.

Dept. of Cucurbits

Cucumber Genetics and Breeding

AFLP marker linked with bitter gene

Zhongnong 16 Zhongnong 26 Zhongnong 26

➤ SSR map of inbred lines recombined by European and North China type was constructed.

➤ The AFLP and SSR markers closely linked to leaf color, fruit bitterness, gynoecious, resistance to scab downy mildew and powdery mildew were obtained.

The first prize of Ministry of Agriculture, PRC

Dept. of Cucurbits

Melon Genetics and Breeding

Zhongmi 1 Zhongmi 4

Zhongmi 5 Chip hybridization of melon

Genetic analysis of melon fruit flavor compounds by gene chip initiated first in China.

Dept. of Cucurbits

Squash Genetics and Breeding

Jinxiang 1

Water melon genetics and breeding

6 squash varieties, 10 summer squash hybrids and 10 water melon hybrids have been developed.

Dept. of Potato

Potato Genetics and Breeding


Introduction and preservation of over 1000 accessions of different germplasm resources, genetics and breeding and genetic improvement.

15 new varieties with characteristics of early and medium - late maturity, table use, processing and high content of starch.

Zhongshu 4 Zhongshu 5 Zhongshu 6 Zhongshu 7 Zhongshu 8
Zhongshu 9 Zhongshu 10 Zhongshu 11 Zhongshu 12 Zhongshu 13 Zhongshu 14

Dept. of Potato

Breeding and application of new early-maturing and high-resistance potato varieties awarded the second prize of National Science and Technology Progress in 2017.



Dept. of cultivation & Postharvest Technology

Environment Controlled Cultivation

High and stable yield and standardized cultivation technique of tomato

High yield cultivation of pepper

All year round, pollution free, high quality and high efficient vegetable production under protected condition system was established.

Dept. of cultivation & Postharvest Technology

Soiless Culture Technology

Eco-organic Soiless Cultivation Technique (ESCT)

Melon

Tomato

Chinese chive

Focus on biotic/abiotic stresses, salt tolerance and root rejuvenation agents etc.

Dept. of cultivation & Postharvest Technology

Factory Production of Vegetable Seedling

Construction of modern and high efficient seedling production system through controlling plantlet shape of vegetable seedlings, integrated substrate ratio, fast germination, precision fertigation, etc.

Cabbage Seedling



Dept. of Plant Protection

Integrated Pest Management

Pathogens resources library containing 5000 strains was established to provide pathogens for selection of disease resistant varieties, novel pesticide discovery, resistance gene mining.

Pathogens preserved in mineral oil

Panchromatic image acquisition system

Construction of disease diagnosis platform of horticultural crops by disease morphology, ELISA and nondestructive diagnosis technology of computer vision

Worksheet of safe application of pesticide on protected vegetables

Establishment of micro-screening model of fungicides and its utilization

Dept. of Plant Protection

Integrated Management of the Insect

Bemisia tabaci

Western flower thrips damage

Sustainable control technology system of western flower thrips

- First reported major dangerous alien species - *Bemisia tabaci* biotypes B and Q
- Discovered a new dangerous alien species - western flower thrips
- Research on its occurrence, distribution and damage law

Dept. of Plant Protection

The MAPK-Mediated Differential Expression of Midgut Receptor Genes Confers Resistance to *Bt* Toxin Cry1Ac in Diamondback Moth.

(PLoS Genetics, 2015)

Dept. of Plant Protection

Vegetable Disease Research

Molecular Mechanism Research on:

- 1) Nematode Resistance
- 2) Fusarium Oxyспорum Resistance

Dept. of Plant Protection

The genome sequences of Bio-control Fungus *Purpureocillium lilacinum* and biosynthetic pathway for leucinostatin A.

(PLoS Pathogen, 2016, 12(7):e1005685)

Dept. of Biotechnology

Genomics and Functional Genomics

Important achievements of genome research on cucumber, potato, Chinese cabbage and tomato published in "Nature", "Nature Genetics", "Nature Biotechnology" and "Science".

Dept. of Biotechnology

Molecular Genetics Research on Vegetables

Deciphering the Diploid Ancestral Genome of the Mesohexaploid *Brassica rapa*
(The Plant Cell, 2013)

Origin, inheritance, and gene regulatory consequences of genome dominance in polyploids (PNAS, 2014)

Dept. of Biotechnology


Subgenome parallel selection is associated with morphotype diversification and convergent crop domestication in *Brassica rapa* and *Brassica oleracea*.

(Nature Genetics, 2016, 48(10) : 1218-1224)


Dept. of Ornamental Horticulture

Flower Tissue Culture and Chinese Rose Breeding

Over 30 Chinese rose varieties have been developed using cross breeding, radiation breeding etc.




In vitro conservation, virus elimination and factory production of flower seedling.



Dept. of Ornamental Horticulture


Lily Genetics and Breeding

Cell suspension culture and plantlet regeneration of lily selection and identification of mutant with salt-tolerant ability




Superior lily varieties of Jinwang 1, 2 and a number of mutants have been developed by radiation breeding technique.

Establishment of lily molecular markers and genetic transformation system of lily based on filaments, scales, callus and albino; selection and cloning of important functional genes



Virus detection and virus elimination techniques of lily



Dept. of Ornamental Horticulture

Tree Peony Breeding

Exploration, collection, conservation and enhancement of tree peony and peony germplasm resources in domestic and abroad.

New variety development of tree peony and peony.

Florescence controlling, *in vitro* conservation.



Wild germplasm exploration



Supervision and Testing Center for Vegetable Quality




DUS Center (Beijing)



Publication

“China Vegetables” won the National Journals Award in 2003




“Acta Horticulturae Sinica” won a series of awards in recent years



Horticultural Plant Journal



Scientific Transformation



Beijing Zhongshu Horticultural Crop Seed Co. Ltd.

Scientific Transformation





中国农业科学院蔬菜花卉研究所

丰产优质抗病新品种选育



新特蔬菜品种开发



Int'l Cooperation and Exchange



INTA, Argentina

Dutch-Sino Joint Lab on Vegetable Breeding

China-Czech Mycorrhizal & Environmental Biotechnology Research Center

International Training Workshop of Vegetable Crops Breeding Technology

Int'l Cooperation and Exchange



赴俄罗斯马铃薯研究所签署联合实验室合作协议

赴埃及农业研究中心园艺研究所签署蔬菜科技合作协议

与意大利国家花卉栽培研究所签署科技合作协议

赴美国威斯康辛大学园艺系筹建中美蔬菜分子育种联合实验室

International Training Workshop on Modern Breeding and Cultivation Technology of Vegetables, Beijing, China 2017

我所组办“蔬菜作物现代育种与栽培技术国际培训班”谱写“一带一路”农业科技合作新篇章



蔬菜基地实地参与学习

扎实的理论知识与实操操作

丰富多彩的课堂活动

八国学员国际汇报与答辩证书

蔬菜花卉科技报



Graduate Education

1. Authority of awarding:
M. Phil. degrees: since 1984
Doctor's degrees: since 1996
Postdoctoral station: since 2003
2. The institute has 18 doctoral tutors, 44 master instructors, and has trained 345 graduate students, of which 73 received Doctor degree.
3. More than 30 foreigner students carry out research as visiting scholars or seeking for doctoral degree in IVF every year.



Institute of Vegetables and Flowers
Chinese Academy of Agricultural Sciences

PRESENTATION BY MR. KUN YANG, ASSOCIATE RESEARCHER, BEIJING SUB-CENTER FOR NEW PLANT VARIETY TESTS, INSTITUTE OF VEGETABLES AND FLOWERS, CHINESE ACADEMY OF AGRICULTURAL SCIENCES, INTRODUCING THE BEIJING SUB-CENTER FOR NEW PLANT VARIETY TESTS




Brief Introduction of Beijing Center for New Plant Variety Tests, MOA, P.R. China

September 19, 2018
Beijing

BEIJING Center

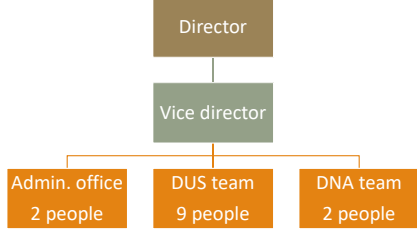
- ◆ Established on September 29, 2000.
- ◆ Affiliated to Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences.
- ◆ Directed by Institute director, managed by Department of quality safety and test technology.
- ◆ 5 staff, 10 extra employees.

BEIJING Center

Empowered and entrusted by Ministry of Agriculture, P.R.China



BEIJING Center



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    graph TD
      Director[Director] --> Vice[Vice director]
      Vice --> Admin[Admin. office  
2 people]
      Vice --> DUS[DUS team  
9 people]
      Vice --> DNA[DNA team  
2 people]
    
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BEIJING Center



测试体系规划图

Beijing
Capital of China
As a city existed for 3,000 years
Area:16,410.54Km²
Population:21,701,000
Long.: 115.7° —117.4°
Lat.: 39.4° —41.6°
Rainfall: 644.2mm/y
Light length:2,780.2 hours/y

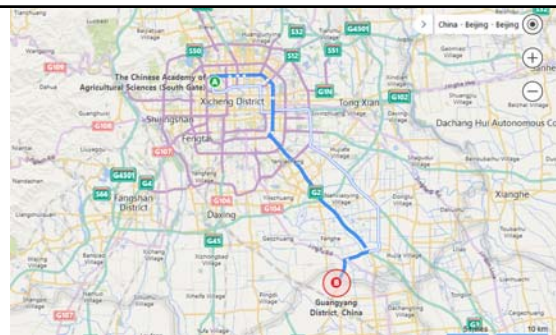
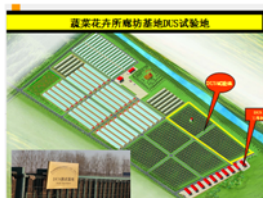
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Institute:
2 office rooms and 1 laboratory,
totally 300m²



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Trial field 4 ha.
studio rooms 486m²
glass greenhouse 8000m²
helio greenhouse 2600m²
plastic greenhouse 5000m²



Distance from institute to trial field:
70 km



Trial field

What's our missions?



According to the New Seeds Law promulgated on November 4, 2015, DUS become basic requirements for:

- PVP
- Variety Approval
- Variety Registration
- Enforcement of Market

What's our missions?

According to new management regulations for DUS testing organizations promulgated on October 12, 2016:

1. Undertaking DUS test for PVP office, national or provincial Seed management units.
2. Undertaking technical identification of variety infringement for authorities.
3. Researching in TGs and new methods or technology.
4. Collection of Variety Material, pathogens, insect protos.
5. Maintenance of Variety Database on description, DNA fingerprints, photos, etc.



What we do?

DUS TEST FOR VEGETABLES, ORNAMENTALS, MAIZE, SOYBEAN
(START FROM 2001)



DNA TEST FOR CABBAGE, PEPPER, TOMATO
(START FROM 2016)



Historical tasks of DUS testing

year	N. of Crops	N. of applications	Funds(RMB)
2009	6	27	30,000
2010	6	47	70,000
2011	10	64	80,000
2012	10	68	250,000
2013	13	75	250,000
2014	12	72	250,000
2015	10	65	280,000
2016	13	309	580,000
2017	17	587	1,500,000
2018	17	788	2,420,000

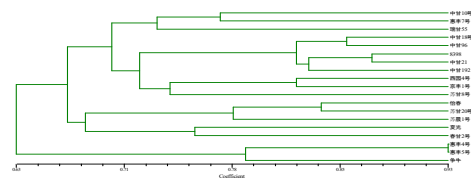
Main crops in trial in 2018

Maize: 427 varieties in trial
Tomato: 209 varieties in trial
Chrysanthemum: 85 varieties in trial
Cucumber: 76 varieties in trial
Cabbage: 52 varieties in trial
Squash: 30 varieties in trial



Historical tasks of DNA testing

Cabbage: 148 varieties
Capsicum: 249 varieties
Tomato: 209 varieties



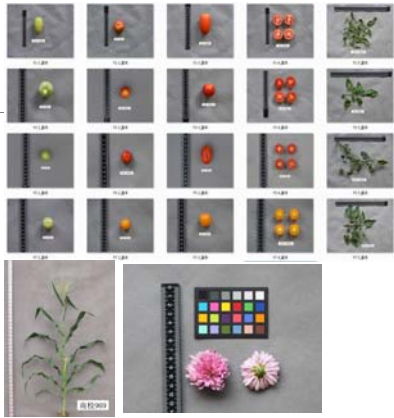
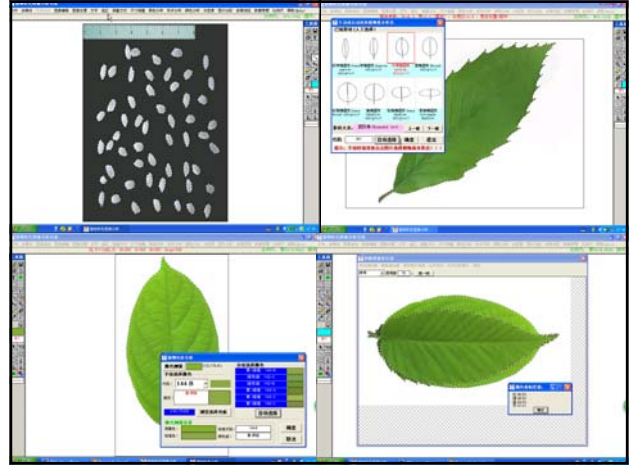
Historical tasks of TG development

Year	Number	TG
2002	2	cabbage, Tomato
2003	6	Carrots, Beans, Celery, Cowpeas, Cabbage, Cauliflower
2008	2	Peony, Tulip
2009-2013	6,4DNA	Hemerocallis fulva, Henna, Clematis, Harbinger, Lycoris radiata, Pansy, Cucumis(SSR), Capsicum (SSR), Lilium(SSR), Tomato(InDel)
2016	5	Paphiopedilum, Heuchera, Salvia, Pumpkin(Cucurbita maxima), Malva verticillata
Total	21,4DNA	

DUS Data Platform



Image Analysis



yangkun@caas.cn

[Annex V follows]

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 November 5, 2018

Species	Basic Document	Leading Expert(s)
Lettuce (<i>Lactuca sativa</i> L.) (Partial revision: addition of 2 new <i>Bremia lactucae</i> races; adaptation of <i>Bremia lactucae</i> race names)	TG/13/10 Rev. 2, TWV/52/4	Ms. Amanda van Dijk (NL)
Pea (<i>Pisum sativum</i> L.) (Partial revision: disease resistance explanation for <i>Fusarium oxysporum</i> f. sp. <i>pisi</i> race 1 (Ad. 58))	TG/7/10 Rev., TWV/52/5	Mr. Pascal Coquin (FR)
*Fennel (<i>Foeniculum vulgare</i> Miller) (Revision)	TG/183/4(proj.1)	Ms. Marian van Leeuwen (NL)
Spinach (<i>Spinacia oleracea</i> L.) (Partial revision: Characteristic 18)	TG/55/7 Rev. 4, TWV/52/6	Ms. Marian van Leeuwen (NL)
*Swiss Chard, Leaf Beet (<i>Beta vulgaris</i> L. ssp. <i>vulgaris</i> var. <i>flavescens</i> DC. f. <i>crispa</i>) (Revision)	TG/106/5(proj.2)	Ms. Chrystelle Jouy (FR)
Watercress (<i>Nasturtium microphyllum</i> Boenn. ex Rchb.; <i>Nasturtium officinale</i> R. Br.; <i>Nasturtium xsterile</i> (Airy Shaw) Oefelein)	TG/NASTU(proj.3)	Mr. Tom Christie (GB)
Watermelon (<i>Citrullus lanatus</i> (Thunb.) Matsum. et Nakai) (Partial revision: explanations for seed characteristics 34, 35, 36)	TG/142/5, TWV/52/7	Ms. Marian van Leeuwen (NL)

DRAFT TEST GUIDELINES TO BE DISCUSSED AT TWV/53
(* indicates possible final draft Test Guidelines)

**(Guideline date for Subgroup draft to be circulated by Leading Expert: February 8, 2019
Guideline date for comments to Leading Expert by Subgroup: March 8, 2019)**

New draft to be submitted to the Office of the Union
by April 5, 2019

Species	Basic Document	Leading Expert(s)	Interested Experts (State / Organization) ¹
Mizuna (<i>Brassica rapa</i> L. subsp. <i>nipposinica</i> (L. H. Bailey) Hanelt)	NEW	Ms. Nahida Bhuiyan (AU)	FR, GB, IT, JP, QZ, ESA, ISF, Office
Chick-pea (<i>Cicer arietinum</i> L.)	TG/143/4	Ms. Chrystelle Jouy (FR)	AU, BR, CA, CN, ES, IT, KR, QZ, US, ESA, ISF, Office
Curly Kale (<i>Brassica oleracea</i> L. var. <i>sabellica</i> L.)	TG/90/6	Mr. Takayuki Nishikawa (JP)	DE, FR, GB, IT, JP, KR, NL, QZ, ESA, ISF, Office
Melon (<i>Cucumis melo</i> L.) (Partial revision: Char. 75 "Resistance to Melon necrotic spot virus (MNSV) E8 strain")	TG/104/5 Rev.	Ms. Chrystelle Jouy (FR)	AU, BR, ES, IT, JP, NL, QZ, CLI, ESA, ISF, Office
Lettuce (<i>Lactuca sativa</i> L.) (Partial revision: addition of new <i>Bremia lactucae</i> race(s))	TG/13/10 Rev. 2	Ms. Amanda van Dijk (NL)	AU, BR, CA, DE, ES, FR, IS, IT, JP, QZ, RO, CLI, ESA, ISF, Office
Pepper (<i>Capsicum annum</i> L.) (Revision)	TG/76/8 Rev.	Ms. Marian van Leeuwen (NL)	BR, CA, CN, ES, FR, JP, IT, KR, QZ, CLI, ESA, ISF, Office
Spinach (<i>Spinacia oleracea</i> L.) (Partial revision: Characteristics 17, 18)	TG/55/7 Rev. 4	Ms. Marian van Leeuwen (NL)	AR, AU, CN, DE, ES, FR, IT, JP, PL, QZ, CLI, ESA, ISF, Office
Squash (Partial revision: to add new Characteristic "Resistance to ZYMV")	TG/119/4 Corr. 2	Ms. Chrystelle Jouy (FR)	IT, JP, KR, NL, QZ, CLI, ESA, ISF, Office
Tomato (<i>Solanum lycopersicum</i> L.) (Partial revision: Chars. and Ads. 48 and 53)	TG/44/11 Rev.	Ms. Amanda van Dijk (NL)	CA, CZ, ES, FR, HU, IS, IT, JP, PL, KR, QZ, RO, RU, CLI, ESA, ISF, Office
Tomato rootstock (Partial revision: Chars. and Ads. 24 and Ad. 28)	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 (<i>Brassica rapa</i> L. var. <i>rapa</i> L.) (Revision)	TG/37/11(proj.4)	Mr. Pascal Coquin (FR)	TWA, CA, CN, CZ, DE, ES, GB, IT, JP, KR, NL, PL, QZ, US, ZA, CLI, ESA, ISF, Office

[End of Annex V and of document]

¹ for name of experts, see list of participants