International Union for the Protection of New Varieties of Plants

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Technical Committee	**TC/56/8**
Fifty-Sixth Session **Geneva, October 26 and 27, 2020**	**Original:** English **Date:** August 13, 2020

to be considered by correspondence

UPOV DATABASES

Document prepared by the Office of the Union

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EXECUTIVE SUMMARY

1.   The purpose of this document is to report on developments concerning the UPOV code system and present a proposal to enable UPOV Codes to provide useful information on variety groups or types for DUS testing purposes.

2.   The TC is invited to:

        (a)   request the Office of the Union to prepare a draft revised "Guide to the UPOV code system" on the basis of the proposal set out in paragraphs 15 to 26 of this document for consideration by the TC and CAJ, at their sessions in 2021 and, subject to agreement by the TC and CAJ, present the draft revised "Guide to the UPOV code system" (document UPOV/INF/23) for adoption by the Council in 2021;

        (b)   request the Office of the Union to invite comments by the TWPs at their sessions in 2021 on the draft revised "Guide to the UPOV code system" (document UPOV/INF/23) on the basis of the proposal set out in paragraphs 15 to 26 of this document, to assist the TC in its consideration of the draft; and

        (c)   request the Office of the Union to present proposals to address the taxonomical reclassification of *Beta vulgaris* ssp. *vulgaris*, *Brassica oleracea*, *Citrus* and *Zea mays*, in conjunction with a proposal to revise the "Guide to the UPOV code system" (document UPOV/INF/23) for consideration by the TWPs and the TC at their sessions in 2021.

3.   The structure of this document is as follows:

4.   The following abbreviations are used in this document:

CAJ: Administrative and Legal Committee
ISTA   International Seed Testing Association
GRIN: Germplasm Resources Information Network
TC: Technical Committee
TWA: Technical Working Party for Agricultural Crops
TWC: Technical Working Party on Automation and Computer Programs
TWF: Technical Working Party for Fruit Crops
TWO: Technical Working Party for Ornamental Plants and Forest Trees
TWP(s):   Technical Working Party(ies)
TWV: Technical Working Party for Vegetables

UPOV CODE SYSTEM

5.   The "Guide to the UPOV Code System", as amended by the TC, at its forty-eighth session[1], and the CAJ, at its sixty-fifth session[2], is reproduced in Annex I to documents TC/49/6 and CAJ/67/6 and is available on the UPOV website (see https://www.upov.int/genie/resources/pdfs/upov_code_system_en.pdf).

6.   The Consultative Committee, at its ninety-sixth session, held in Geneva on October 31, 2019, noted that, at the appropriate time, the Council would be invited to adopt the "Program for improvements to the PLUTO database" and the "Guide to the UPOV Code System", which would be made accessible via the UPOV Collection UPOV/INF document series (document CC/96/14, "Report", paragraph 85).

7.   The CAJ, in 2020, will consider draft document UPOV/INF/23 "UPOV Code System" (document UPOV/INF/23/1 Draft 1).

8.   The CAJ, subject to its conclusions in 2020, may invite the TC to consider in 2021 a new draft of document UPOV/INF/23/1.

AMENDING THE UPOV CODE SYSTEM TO PROVIDE INFORMATION ON VARIETY GROUPS OR TYPES

9.   The Technical Committee (TC), at its fifty-fifth session, held in Geneva, on October 28 and 29, 2019, considered the proposed amendments to the "Guide to the UPOV Code System" to reflect the creation of exceptions for the UPOV Codes for popcorn, sweet corn and *Brassica oleracea* (see document TC/55/25 "Report", paragraphs 207 to 210).

10.   The TC recalled that the main purpose of the UPOV Code System was to overcome the problem of synonyms for plant taxa and should be based on taxonomic criteria, also bearing in mind that the UPOV Code System was used by other international organizations, such as ISTA.

11.   The TC agreed that the exceptions proposed to the "Guide to the UPOV Code System" diverged from the Germplasm Resources Information Network (GRIN). The TC agreed that UPOV Codes should continue following GRIN taxonomy as far as possible.

12.   The TC agreed to postpone the amendment to the "Guide to the UPOV Code System" and to explore alternative solutions to enable UPOV Codes to provide useful information on variety groups or types for DUS testing purposes. The TC agreed to invite the Office of the Union to prepare a document with proposals, for consideration at its fifty-sixth session (see document TC/55/25 "Report", paragraph 210).

13.   The Office of the Union contacted members of the Union that expressed a need for solutions to enable UPOV Codes to provide useful information on variety groups or types for DUS testing purposes, to clarify their requirements. Consultations with members of the Union and related discussions, identified that the following elements should be included in proposed solutions:

        (a)   group/type or other information for DUS purposes; and
        (b)   analysis of variety denominations according to variety denomination classes, irrespective of whether the class follows the General Rule (one genus / one class) or is one of the exceptions to the General Rule (i.e. classes within a genus or class encompassing more than one genus)

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[1]   Held in Geneva from March 26 to 28, 2012.

[2]   Held in Geneva on March 29, 2012.

14.	The solutions would need to be developed in a way that would enable relevant information to be included in UPOV PRISMA, PLUTO database, GENIE database, Test Guidelines and the Web-based TG Template. The solutions would also need to enable the use of UPOV codes in UPOV members' databases and other relevant organizations, including OECD and ISTA.

Proposal

15.	The purpose of the current UPOV code system is to enhance the usefulness of the UPOV Plant Variety Database (PLUTO) by overcoming the problem of synonyms for plant taxa.

16.	It is proposed to enhance the current UPOV code system by providing additional information appended to existing UPOV codes.

17.	UPOV codes currently have three elements. A new element could be appended to the UPOV code to provide relevant information on variety groups and types and denomination class. The new appended element would become part of the UPOV code system without affecting the existing UPOV code elements (e.g. Genus, species and subspecies).

18.	In general, the following UPOV code construction is currently used:

(a)	an alphabetic element of five letters (e.g. XXXXX) indicating the genus ("genus element");

(b)	a three-letter element (e.g. YYY) indicating the species ("species element");

(c)	where relevant, a further element of up to three characters (e.g. ZZ1) indicating a sub-specific unit ("sub-species element");

Current UPOV code example: XXXXX_YYY_ZZ1

19.	The new proposed UPOV code format would not change the existing elements, other than restricting the existing elements to letters (see paragraphs 20 and 21, below) and would append an extra element to UPOV codes, as required. The new appended element would be clearly distinguishable from the existing elements in the UPOV code because it would be prefixed by a digit, or comprised exclusively of digits. Furthermore, the new element could be appended to any UPOV code, regardless of plant taxa (genera, species or subspecies levels). Examples:

UPOV code for genus *Abies*:... ABIES
UPOV code with appended element: .... ABIES_1234

UPOV code for species *Abies sibirica*: .... ABIES_SIB
UPOV code with appended element: .... ABIES_SIB_1234

UPOV code for sub-species *Abies sibirica* subsp. *semenovii*: .... ABIES_SIB_SEM
UPOV code with appended element: .... ABIES_SIB_SEM_1234

Naming convention:

20.	The new appended element to UPOV codes would be identifiable though the following naming convention:

•	A digit prefix would identify the new appended element.
•	Different digits could, if appropriate, indicate different categories of information.

21.	This approach would require the modification of the existing UPOV code system to avoid digits in the third element ("sub-species" element, e.g. "ZZ1"). Although the general construction of the UPOV code system mentioned the possibility to use numbers in the third element, this possibility has not been used.

Procedure for introducing and amending the new UPOV code element

22.   The relevant TWP(s) would consider proposals for appending the new elements to UPOV codes and any subsequent amendments. The relevant TWP(s) would agree the required information to be appended, including the definition of any groups or types of crops, and any subsequent amendments.

Transition

23.   The new UPOV code structure would be compatible with existing databases and systems using the current structure. In particular, the UPOV codes using the new structure would be compatible with existing databases and systems, even if those systems and databases did not support the appended element. In this regard, all users would have the possibility not to use the new appended element in UPOV codes.

Implementation

24.   When an existing UPOV code is updated to follow the new format, all members of the Union and contributors of data to the Plant Variety Database would be informed. Examples of how the new appended element could be applied are given below.

25.   The following are examples of appended information on variety types or groups:

- Barley – appending information on row type (two- ("2") or six-row ("6")) type; and seasonal type, (winter ("W") or spring ("S"))

    Existing UPOV code: HORDE_VUL

    Updated UPOV codes:

    HORDE_VUL_2W (Appended info. two-row/ winter type)
    HORDE_VUL_2S (Appended info. two-row/ spring type)
    HORDE_VUL_6W (Appended info. six-row/ winter type)
    HORDE_VUL_6S (Appended info. six-row/ spring type)

- Apple – Type: 1=Fruit, 2=Rootstock, 3=ornamental; Groups: seedling ("S"); mutant ("M"); Cripps Pink mutant ("MC"); Fuji mutant ("MF"); and Gala mutant ("MG")

    Existing UPOV code: MALUS_DOM

    Updated UPOV codes: MALUS_DOM_1S
    MALUS_DOM_1MC
    MALUS_DOM_1MF
    MALUS_DOM_1MG
    MALUS_DOM_2
    MALUS_DOM_3

26.   The following is an example of appending information for denomination class purposes:

In *Beta*, all previously recognized taxonomical ranks lower than subspecies are now considered by GRIN as synonyms of *Beta vulgaris* L. subsp. *vulgaris*. Using only the GRIN botanical classification for the UPOV code would remove the possibility for the denomination classes within *Beta* to be identified by the UPOV code.

Current information on denomination classes:

	Botanical names	UPOV codes
Class 2.1	*Beta vulgaris* L. var. *alba* DC., *Beta vulgaris* L. var. *altissima*	BETAA_VUL_GVA; BETAA_VUL_GVS
Class 2.2	*Beta vulgaris* ssp. *vulgaris* var. *conditiva* Alef. (syn.: *B. vulgaris* L. var. *rubra* L.), B. *vulgaris* L. var. *cicla* L., *B. vulgaris* L. ssp. *vulgaris* var. *vulgaris*	BETAA_VUL_GVC; BETAA_VUL_GVF

	Botanical names	UPOV codes
Class 2.3	*Beta* other than classes 2.1 and 2.2.	other than classes 2.1 and 2.2

Appended information for denomination classes could be introduced as follows: Fodder beet: Class 2.1 ("21F"); Sugar beet group: Class 2.1 ("21S"); Beetroot: Class 2.2 ("22R"); Leaf beet: Class 2.2 ("22L"); :

	Botanical names	UPOV codes
Class 2.1	*B. vulgaris* L. ssp. *vulgaris* (synonym to *B. vulgaris* L. var. *alba* DC.), *B. vulgaris* L. ssp. *vulgaris* (synonym to *B. vulgaris* L. var. *altissima*)	BETAA_VUL_VUL_21F; BETAA_VUL_VUL_21S
Class 2.2	*Beta vulgaris* ssp. *vulgaris* var. *conditiva* Alef. (synonym to *B. vulgaris* L. var. *rubra* L.), B. *vulgaris* L. var. *cicla* L., *B. vulgaris* L. ssp. *vulgaris* var. *vulgaris*	BETAA_VUL_VUL_22R; BETAA_VUL_VUL_22L
Class 2.3	*Beta* other than classes 2.1 and 2.2.	other than classes 2.1 and 2.2

27.   The TC is invited to:

(a) request the Office of the Union to prepare a draft revised "Guide to the UPOV code system" on the basis of the proposal set out in paragraphs 15 to 26 of this document for consideration by the TC and CAJ, at their sessions in 2021 and, subject to agreement by the TC and CAJ, present the draft revised "Guide to the UPOV code system" (document UPOV/INF/23) for adoption by the Council in 2021; and

(b) request the Office of the Union to invite comments by the TWPs at their sessions in 2021 on the draft revised "Guide to the UPOV code system" (document UPOV/INF/23) on the basis of the proposal set out in paragraphs 15 to 26 of this document, to assist the TC in its consideration of the draft.

NEW PROPOSALS FOR AMENDING UPOV CODES

UPOV codes for Beta vulgaris

28.   The Office of the Union was informed of the inconsistency between GENIE and GRIN with regard to the botanical names of *Beta vulgaris* L. subsp. *vulgaris.*

29.   Annex I to this document provides the number of entries in the PLUTO database for *Beta vulgaris* L. subsp. *vulgaris* and its synonyms, as currently provided in the GENIE database. A proposal for updating UPOV codes in line with the taxa in GRIN is provided in Annex I to this document. All previously recognized taxonomical ranks lower than subspecies are added as synonyms to *Beta vulgaris* L. subsp. *vulgaris.*

30.   The TWV and TWA, at their sessions in 2020, considered the proposal to amend the UPOV codes for *Beta vulgaris*, as reproduced in Annex I to this document (see documents TWV/54/9 "Report", paragraphs 42 and 43, and TWA/49/7 "Report", paragraph 32).

31.   The TWV, at its fifty-fourth session, recalled that, at its fifty-second session, it had agreed that the information on type of maize (popcorn, sweet corn) and red and white cabbage varieties was useful for grouping varieties and organizing growing trials and should remain in the database (see document TWV/52/20 "Report", paragraph 94). The TWV agreed that the same approach should be used for UPOV codes of the different types of beet varieties.

32.   The TWA, at its forty-ninth session, considered the proposal to amend the UPOV codes for *Beta vulgaris,* as reproduced in Annex I to this document. The TWA noted that the proposal would classify different horticultural crops as synonyms under the same taxa, such as beetroot, leaf beet, turnip, turnip rape, sugar beet and fodder beet. The TWA agreed that it would not be appropriate to delete the UPOV codes proposed before a solution was provided to avoid the loss of information on variety groups.

UPOV codes for Citrus

33.   The Office of the Union was informed of the inconsistency between GENIE and GRIN with regard to the botanical names of *Citrus* species.

34.   Annex II to this document provides the number of entries in the PLUTO database for *Citrus* and its current synonyms, as provided in the GENIE database. Annex II also presents a proposal for updating UPOV codes in line with the taxa in GRIN.

35.   The TWF, at its fifty-first session, considered amending the UPOV codes for *Citrus*, as reproduced in Annex II to this document. The TWF agreed that the reclassification of *Citrus clementina* hort. ex Tanaka (UPOV code: CITRU_CLE) as a synonym of *Citrus aurantium* L. (UPOV code: CITRU_AUM) should not be implemented before solutions to enable UPOV codes to provide information on variety groups were provided. The TWF noted that the remaining proposals had no practical impact due to the absence of varieties reported in the PLUTO database and agreed to the proposed changes (see document TWF/51/10 "Report", paragraph 51).

36.   The agreement by the TWF, at its fifty-first session, on the reclassification of certain Citrus species would require partial revision of the Test Guidelines for Citrus to move obsolete species from the "principle botanical names" box to the "alternative botanical names" box.

37.   It is recalled that the TC agreed to postpone the amendment to the "Guide to the UPOV Code System" and to explore alternative solutions to enable UPOV Codes to provide useful information on variety groups or types for DUS testing purposes. Therefore, the TC may wish to review proposals to revise the UPOV Codes for popcorn, sweet corn, *Brassica oleracea*, *Beta vulgaris* ssp. *vulgaris* and Citrus in parallel with its consideration of the draft of document UPOV/INF/23 "UPOV Code System".

> *38.   The TC is invited to request the Office of the Union to present proposals to address the taxonomical reclassification of Beta vulgaris ssp. vulgaris, Brassica oleracea, Citrus and Zea mays, in conjunction with a proposal to revise the "Guide to the UPOV code system" (document UPOV/INF/23) for consideration by the TWPs and the TC at their sessions in 2021.*

[Annexes follow]

ANNEX I

INCONSISTENCIES BETWEEN UPOV CODES AND GRIN FOR *BETA VULGARIS* SUBSP. *VULGARIS*
Current situation and proposed UPOV code amendments

		Currrent			Proposal		
Entries in PLUTO	TG	UPOV Code	Principal botanical name	Other botanical name(s)	UPOV Code	Principal botanical name	Other botanical name(s)
5	/	**BETAA_VUL_GV**	**Beta vulgaris L. subsp. vulgaris**	n.a.	**BETAA_VUL_<mark>VUL</mark>**	**Beta vulgaris L. subsp. vulgaris**	Beta altissima Steud.; Beta brasiliensis hort. ex Voss, nom. inval.; Beta chilensis hort.; Beta cicla (L.) L.; vulgaris f. rhodopleura (Alef.) Helm; vulgaris f. vulgaris L.; vulgaris subsp. cicla (L.) Schübl. & G. Martens; Beta vulgaris subvar. flavescens DC.; Beta vulgaris var. altissima Döll; Beta vulgaris var. cicla L.; Beta vulgaris var. conditiva Alef.; Beta vulgaris var. flavescens (DC.) Mansf.; Beta vulgaris var. rapacea W. D. J. Koch; Beta vulgaris var. rubra DC.; Beta vulgaris var. saccharifera Alef.; Beta vulgaris var. vulgaris L.; Beta vulgaris var.-gr. crassa Alef.
1298	TG/150	BETAA_VUL_**G**VA	Beta vulgaris L. ssp. vulgaris var. alba DC.	Beta vulgaris L. ssp. vulgaris var. crassa Alef.; Beta vulgaris L. ssp. vulgaris var. crassa Mansf.; Beta vulgaris L. ssp. vulgaris var. rapacea K. Koch			
811	TG/60	BETAA_VUL_**G**VC	Beta vulgaris L. ssp. vulgaris var. conditiva Alef.	Beta vulgaris L. ssp. vulgaris var. esculenta L.; Beta vulgaris L. ssp. vulgaris var. hortensis			
195	TG/106	BETAA_VUL_**G**VF	Beta vulgaris L. ssp. vulgaris var. flavescens DC.	Beta vulgaris L. ssp. vulgaris var. cicla (L.) Ulrich; Beta vulgaris L. ssp. vulgaris var. vulgaris			
21799	/	BETAA_VUL_**G**VS	Beta vulgaris L. ssp. vulgaris var. saccharifera Alef.	Beta vulgaris L. ssp. vulgaris var. altissima Doell			

[Annex II follows]

INCONSISTENCIES BETWEEN UPOV CODES AND GRIN FOR *CITRUS*
Current situation and proposed UPOV code amendments

		Currrent			Proposal		
Entries in PLUTO	TG	UPOV Code	Principal botanical name	Other botanical name(s)	UPOV Code	Principal botanical name	Other botanical name(s)
10	TG/202	CITRU_AUM	Citrus aurantium L.	n.a.	CITRU_AUM	Citrus ×aurantium L.	Citrus amara Link; Citrus bigarradia Loisel.; Citrus intermedia hort. ex Tanaka; Citrus taitensis Risso; Citrus vulgaris Risso; Citrus ×aurantium subsp. aurantium L.; Citrus ×aurantium subsp. jambiri Engl.; Citrus ×aurantium subsp. keonla Engl.; Citrus ×aurantium subsp. suntara Engl.; Citrus ×aurantium var. aurantium L.; Citrus ×aurantium var. citrina Lush.; Citrus ×bigarradia var. volkameriana Risso; Citrus ×clementina hort. ex Tanaka; Citrus ×crenatifolia Lush.; Citrus reticulata × C. maxima"
115	TG/201	CITRU_CLE	Citrus clementina hort. ex Tanaka	n.a.			
1	/	CITRU_MRE	Citrus maxima X Citrus reticulata	n.a.			
0	TG/201	CITRU_CRE	Citrus crenatifolia Lush.	n.a.			
0	TG/204	CITRU_INT	Citrus intermedia hort. ex Tanaka	n.a.			
12	TG/203	CITRU_AUR	Citrus aurantiifolia (Christm.) Swingle	Citrus ×javanica Blume	CITRU_AUR	Citrus ×aurantiifolia (Christm.) Swingle	Citrus acida Roxb.; Citrus acida var. acida Roxb.; Citrus aurata Risso; Citrus excelsa var. davaoensis Wester; Citrus grandis Hassk.; Citrus grandis var. grandis Hassk.; Citrus grandis var. oblonga Hassk.; Citrus grandis var. sphaerocarpos Hassk.; Citrus hystrix subsp. acida (Roxb.) Engl.; Citrus lima Lunan; Citrus limetta var. aromatica Wester; Citrus limonellus Hassk.; Citrus limonellus var. limonellus Hassk.; Citrus limonellus var. oxycarpus Hassk.; Citrus medica var. acida (Roxb.) Hook. f.; Citrus ×aurantiifolia var. aurantiifolia (Christm.) Swingle; Citrus ×davaoensis (Wester) Tanaka; Citrus ×excelsa Wester; Citrus ×javanica Blume; Limonia aurantiifolia Christm., Citrus medica × C. micrantha"
0	TG/203	CITRU_AUA	Citrus aurata Risso	n.a.			
0	TG/203	CITRU_DAV	Citrus davaoensis (Wester) Tanaka	n.a.			
0	TG/203	CITRU_EXC	Citrus excelsa Wester	n.a.			
0	/	CITRU_HYS	Citrus hystrix DC.	n.a.	CITRU_HYS	Citrus hystrix DC.	Citrus auraria Michel; Citrus balincolong (Tanaka) Tanaka; Citrus boholensis (Wester) Tanaka; Citrus celebica Koord.; Citrus celebica var. celebica Koord.; Citrus combara Raf.; Citrus echinata St.-Lag.; Citrus hyalopulpa Tanaka; Citrus hystrix subsp. hystrix DC.; Citrus hystrix var. balincolong Tanaka; Citrus hystrix var. boholensis Wester; Citrus hystrix var. hystrix DC.; Citrus kerrii (Swingle) Tanaka; Citrus latipes Hook. f. & Thomson; Citrus macroptera var. annamensis Tanaka; Citrus macroptera var. kerrii Swingle; Citrus papeda Miq.; Citrus papuana F. M. Bailey; Citrus torosa Blanco; Citrus vitiensis Tanaka; Fortunella sagittifolia K. M. Feng & P. I Mao; Papeda rumphii Hassk.
0	TG/203	CITRU_KER	Citrus kerrii (Swingle) Tanaka	Citrus hyalopulpa Tanaka			
149	TG/203	CITRU_LIM	Citrus ×limon (L.) Osbeck	Citrus limon (L.) Burm. f.; Citrus medica var. limon L.; Citrus rissoi Risso; Citrus ×limonia Osbeck; Citrus ×mellarosa Risso; Citrus ×volkameriana (Risso) V. Ten. & Pasq.	CITRU_LIM	Citrus ×limon (L.) Osbeck	Citrus balotina Poit. & Turpin; Citrus bergamota Raf.; Citrus karna Raf.; Citrus limonum Risso; Citrus medica var. limon L.; Citrus rissoi Risso; Citrus ×limon (L.) Burm. f.; Citrus ×limonia Osbeck; Citrus ×mellarosa Risso; Citrus ×volkameriana (Risso) V. Ten. & Pasq.; a hybrid of Citrus × aurantium (C. maxima × C. reticulata) × C. medica
0	TG/203	CITRU_BAL	Citrus balotina Poit. & Turpin	n.a.			
0	TG/203	CITRU_KAR	Citrus karna Raf.	n.a.			
355	TG/201	CITRU_RET	Citrus reticulata Blanco	n.a.	CITRU_RET	Citrus reticulata Blanco	Citrus benikoji hort. ex Tanaka; Citrus daoxianensis S. W. He & G. F. Liu; Citrus depressa var. vangasay (Bojer) H. Perrier; Citrus nobilis Andrews; Citrus vangasay Bojer
0	TG/201	CITRU_BEN	Citrus benikoji hort. ex Tanaka	n.a.			

[End of Annex II and of document]