UPOV

International Union for the Protection of New Varieties of Plants

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Technical Working Party for Fruit Crops

TWF/49/11 Add.

Forty-Ninth Session
Santiago de Chile, Chile, November 19 to 23, 2018

Original: English
Date: November 29, 2018

ADDENDUM TO

MATTERS RELEVANT IN DUS EXAMINATION FOR THE FRUIT SECTOR

Document prepared by the Office of the Union

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This document contains copies of made at the forty-ninth session of the the Technical Working Party for Fruit Crops (TWF), as follows:

- Annex I: "Harmonisation in Apple DUS testing/exchange of samples", by an expert from the European Union;

- Annex II: "Ring Test for Strawberry" by an expert from the European Union.

[Annexes follow]

CPVO
Community Plant Variety Office

Harmonisation in apple DUS testing / exchange of samples

UPOV TWF
Santiago de Chile, 20 November 2018

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Harmonisation in apple DUS testing

- Partners

GEVES
CENTRALNY OŚRODEK BADANIA ODMIAN ROŚLIN UPRAWNYCH
Bundessortenamt
ÚKZÚZ
CIOPORA
nébih
CPVO
Community Plant Variety Office

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Harmonisation in apple DUS testing

- Objectives of the project
  - harmonize the DUS testing of apple varieties in exchanging identical samples of fruits, observing them and confronting the observations

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Harmonisation in apple DUS testing

- Fruits dispatched
  - UKZUZ
    - Svatava
    - Karmina
    - Teser
    - Valstar
  - Geves/INRA
    - Daliclass
    - Delflopion
    - Inored
    - PremA96
    - Sekzie
  - Bundessortenamt
    - Pilot
    - Rewena
    - Fuji BC Nr 2
  - Nébih
    - Rodonit
    - Karneol
    - Rosmerta
  - COBORU
    - Idared
    - Juga
    - Rewena

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Harmonisation in apple DUS testing

- Work done
  - Dispatching examination offices observed and described the fruits before sending them in January 2018
  - As soon as they were in receipt of the fruits, examination offices made the observations
  - Characteristics 24 to 54 of the protocol were be observed
  - Observations were communicated to the CPVO
  - The CPVO compiled the results and sent them out in July 2018

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nb	characteristic	type	CZ description	DE description	FR description	HU description	PL description	Sprea
24	Fruit: size	QN	6	6	7	6	7	*1*
25	Fruit: height	QN	5	6	5	5	5	*1*
26	Fruit: diameter	QN	6	6	6	6	6	*0*
27	Fruit: ratio height/diameter	QN	4	6	4	3	5	*3*
28	Fruit: general shape	PQ	7	2	7	7		5
29	Fruit: ribbing	QN	2	2	2	2	2	*0*
30	Fruit: crowning at calyx end	QN	1	2	1		1	*1*
31	Fruit: size of eye	QN	5	6	7		7	*2*
32	Fruit: length of sepal	QN	3	5	5	6	7	*4*
33	Fruit: bloom of skin	QN	1	1		1	1	*0*
34	Fruit: greasiness of skin	QN	1	2		2	2	*1*
35	Fruit: ground colour	PQ	5	5	3	5	5	2
36	Fruit: relative area of over colour	QN	5	5	5	5	6	*1*
37	Fruit: hue of over colour – with bloom removed	PQ	3	3	3	5	3	2
38	Fruit: intensity of over colour	QN	5	5	5	5	7	*2*
39	Fruit: pattern of over colour	PQ	7	7	7	3	7	4
40	Fruit: width of stripes	QN	5	6	5	7	5	*2*
41	Fruit: area of russet around stalk attachment	QN	1	2	2	2	2	*1*
42	Fruit: area of russet on cheeks	QN	1	1	1	1	2	*1*
43	Fruit: area of russet around eye basin	QN	1	2	1	1	1	*1*
44	Fruit: number of lenticels	QN	5	5	3	3	6	*3*
45	Fruit: size of lenticels	QN	1	2	3	3	3	*2*
46	Fruit: length of stalk	QN	5	5	6	6	5	*1*
47	Fruit: thickness of stalk	QN	4	4	5	5	5	*1*
48	Fruit: depth of stalk cavity	QN	3	4	5	5	6	*3*
49	Fruit: width of stalk cavity	QN	3	5	6	6	5	*3*
50	Fruit: depth of eye basin	QN	4	6	5	5	7	*3*
51	Fruit: width of eye basin	QN	5	6	7	7	7	*2*
52	Fruit: firmness of flesh	QN	3	2	5	4	3	*3*
53	Fruit: colour of flesh	PQ	2	2	2	1	2	1
54	Fruit: aperture of locules (in transverse section)	QN	3	3	3	2	1	

More than 2 notes difference

nb	characteristic	type	Juga	PL Rewena	DE Rewena	Fuji BC NR 2	Pilot	Prema 96	Daliclass	Inored	Sekzie	Idared
24	Fruit: size	QN	1	3	1	2	1	1	1	1	1	1
25	Fruit: height	QN	2	2	3	2	1	1	2	2	3	1
26	Fruit: diameter	QN	2	1	2	2	1	1	1	1	2	2
27	Fruit: ratio height/diameter	QN	2	6	6	3	2	3	2	1	2	3
28	Fruit: general shape	PQ	0	4	3	5	1	6	2	2	1	1
29	Fruit: ribbing	QN	1	2	1	1	1	0	2	1	1	1
30	Fruit: crowning at calyx end	QN	1	1	1	1	1	1	1	1	1	1
31	Fruit: size of eye	QN	5	1	1	3	1	4	1	2	4	2
32	Fruit: length of sepal	QN	3	2	3	2	2	3	2	2	2	2
33	Fruit: bloom of skin	QN	1	0	1	1	0	1	1	1	1	0
34	Fruit: greasiness of skin	QN	2	0	1	2	1	1	1	0	0	1
35	Fruit: ground colour	PQ	2	3	1	2	0	3	0	2	3	4
36	Fruit: relative area of over colour	QN	2	1	2	1	2	1	2	1	2	2
37	Fruit: hue of over colour – with bloom removed	PQ	3	2	2	2	2	1	2	2	3	2
38	Fruit: intensity of over colour	QN	3	2	2	2	3	1	3	2	1	2
39	Fruit: pattern of over colour	PQ	3	5	5	5	5	0	4	1	5	2
40	Fruit: width of stripes	QN	2	2	2	4	4	0	2	0	0	3
41	Fruit: area of russet around stalk attachment	QN	1	0	0	1	2	1	1	1	1	1
42	Fruit: area of russet on cheeks	QN	0	0	0	0	0	0	0	0	0	0
43	Fruit: area of russet around eye basin	QN	0	0	0	0	0	0	0	0	0	1
44	Fruit: number of lenticels	QN	1	4	4	0	2	2	3	2	2	2
45	Fruit: size of lenticels	QN	4	2	2	4	2	2	3	2	3	1
46	Fruit: length of stalk	QN	2	2	2	1	1	3	2	2	3	2
47	Fruit: thickness of stalk	QN	1	1	2	1	2	1	2	1	0	1
48	Fruit: depth of stalk cavity	QN	2	2	1	1	1	2	2	2	3	2
49	Fruit: width of stalk cavity	QN	4	1	2	2	2	3	2	1	1	1
50	Fruit: depth of eye basin	QN	2	1	1	1	1	3	3	2	0	1
51	Fruit: width of eye basin	QN	2	2	1	2	2	5	3	1	1	2
52	Fruit: firmness of flesh	QN	1	3	2	1	2	2	2	1	2	1

Harmonisation in apple DUS testing

- Preliminary results
  - ➢ Different stages of expression reported for very important characteristics:
    - ✓ 'Fruit: ratio height/diameter',
    - ✓ 'Fruit: width of stripes'
    - ⇨ For what reason?

Harmonisation in apple DUS testing

- Raw measurements (mm)

nb	characteristic	type	countr	Juga	PL Rewena	DE Rewena	Fuji BC NR 2	Pilot	Prema 96	Daliclass
25	Fruit: height	QN	A	50	64	62	55	64	47	62
25	Fruit: height	QN	B	68.2	68.3	61.1	69.8	63.5	53.8	65.7
25	Fruit: height	QN	C	68.3	67.8	59.6	63.7	62.9	51.3	69.9
25	Fruit: height	QN	D	43.1	43.3	41.7	42.8	40.0	33.3	44.1
25	Fruit: height	QN	E	67.8	68.7	60.8	68.0	59.9	51.4	66.1
26	Fruit: diameter	QN	A	79	53	53	69	62	49	56
26	Fruit: diameter	QN	B	88.4	64.9	59	78.6	72.1	61.1	71.5
26	Fruit: diameter	QN	C	89.0	66.9	58.0	72.8	70.0	59.2	72.1
26	Fruit: diameter	QN	D	55.6	43.2	43.3	49.9	48.0	38.3	47.2
26	Fruit: diameter	QN	E	88.7	68.6	62.0	77.1	70.5	60.4	71.7
27	Fruit: ratio height/diameter	QN	A	0.63	1.21	1.17	0.8	1.04	0.98	1.1
27	Fruit: ratio height/diameter	QN	B	0.77	1.05	1.04	0.89	0.88	0.88	0.92
27	Fruit: ratio height/diameter	QN	C	0.8	1.0	1.0	0.9	0.9	0.9	1.0
27	Fruit: ratio height/diameter	QN	D	0.8	1.0	1.0	0.9	0.8	0.9	0.9
27	Fruit: ratio height/diameter	QN	E	0.8	1.0	1.0	0.9	0.9	0.9	0.9

Harmonisation in apple DUS testing

- Preliminary results
  - Different stages of expression reported for very important characteristics:
    - ✓ Char 28: *Fruit: general shape*
      - ⇨ diversity of observations for one and the same variety with up to 4 different stages of expressions reported by the 5 examination offices (‘Rosmerta’)
      - ⇨ Presentations in a grid may help improving the situation.
      - ⇨ But this must be checked!

Harmonisation in apple DUS testing

- Preliminary results
  - ➢ Different stages of expression reported for very important characteristics:
    - ✓ Char 35 *Fruit: Ground colour*
      - ⇨ 3 different stages of expressions were attributed to 7 varieties
      - ⇨ one variety was even noted with 4 different stages of expression
      - ⇨ A detailed observation of this characteristic is nevertheless very important in order to assess distinctness and a reduction of the number of stages of expression would be difficult
      - ⇨ assistance of image analysis ?

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Harmonisation in apple DUS testing

- What to do?
  - ✓ Bring field DUS experts together, idea of regular seminars with practical work in front of the same material
  - ✓ Identify how (differently) characteristics are observed
  - ✓ Define what we want
    - ⇨ Explain it clearly in the guideline

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[Annex II follows]

OCVV
Office Communautaire des Variétés Végétales

Ring Test for Strawberry

CPVO co-founded R&D project
2016 – 2019

Project Partners

Examination offices:

- Bundessortenamt – Germany
- COBORU – Poland
- DGAV – Portugal
- OEVV – Spain

CIOPORA – breeders' representative

CPVO – coordinator of the project

Objectives

The harmonization of the implementation of the protocol for strawberry

Review of the characteristics of the current protocol taking into account the following elements:

- Variation of the expression with the environment
- Discriminating power
- Removal/addition of some characteristics from/to the protocol

Additional characteristics

Petiole: appendice petiolar QL

Appendice petiolar: length QN

Leaf: number of leaflets QN

Fruit: density of achenes QN

Inflorescence: length QN

Varieties

Bearing type	Denomination	Breeder/Right Holder	Sources (breeder or a supplier source authorized by the breeder for protected varieties)	Official Variety Description (VD) for the Community right
Not remontant	Clery	CIV	CIV (IT)	Bundessortenamt
	Gariguette	Bred by INRA, French PBR expired in 1998	CIV (IT)	-
Partially remontant	Sweet Charlie	Florida Foundation Seed Producers Inc.	Angiers International (FR)	Bundessortenamt
	Camarosa	The Regents University of California	CIV (IT)	OEVV
Fully remontant	Albion	The Regents University of California	COVIRO (IT)	DGAV
	Murano	CIV	CIV (IT)	Bundessortenamt
Day neutral	Portola	The Regents University of California	COVIRO (IT)	DGAV
	Everest	Edward Vinson Limited	Edward Vinson Limited	Bundessortenamt

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Project schedule

	2016	2017	2018	2019
Planning: activities, varieties, budget… Agreement				
Intermediate meetings (Spain and Portugal)				
Collection of data - 1st growing cycle				
Intermediate meetings (Germany and Poland)				
Collection of data - 2nd growing cycle				
Final meeting (France, CPVO)				
Final report				

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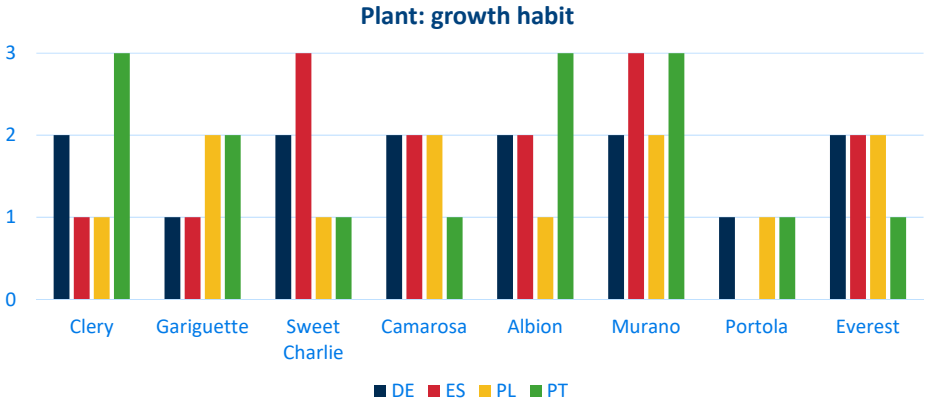
Results of 2017 from 4 testing sites in the EU

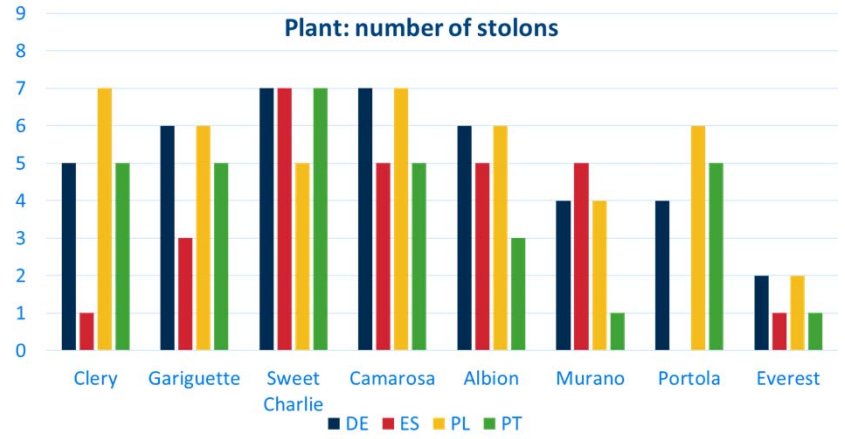



Results of 2017 - examples



upright	1
semi-upright	2
spreading	3

Results of 2017 - examples



absent or very few	1
few	3
medium	5
many	7

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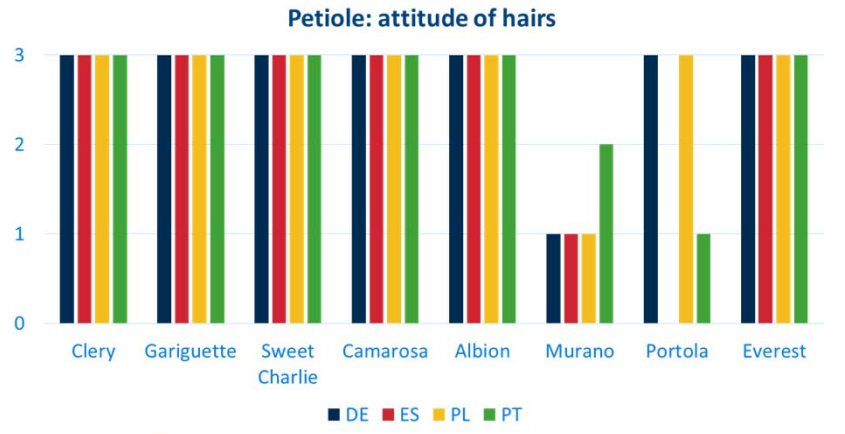
Results of 2017 - examples



upwards	1
slightly outwards	2
horizontal	3

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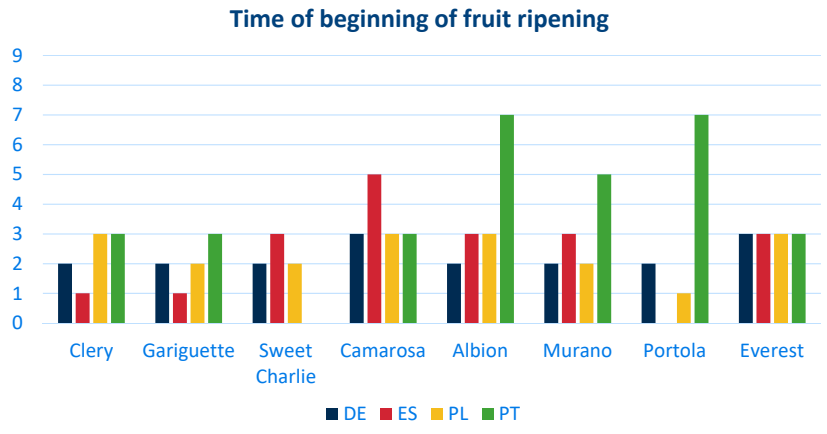
Results of 2017 - examples



very early	1
early	3
medium	5
late	7
very late	9

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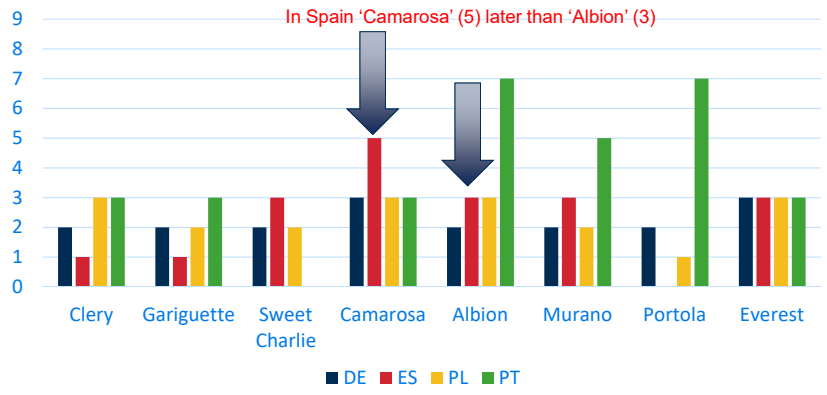
Results of 2017 - examples



very early	1
early	3
medium	5
late	7
very late	9

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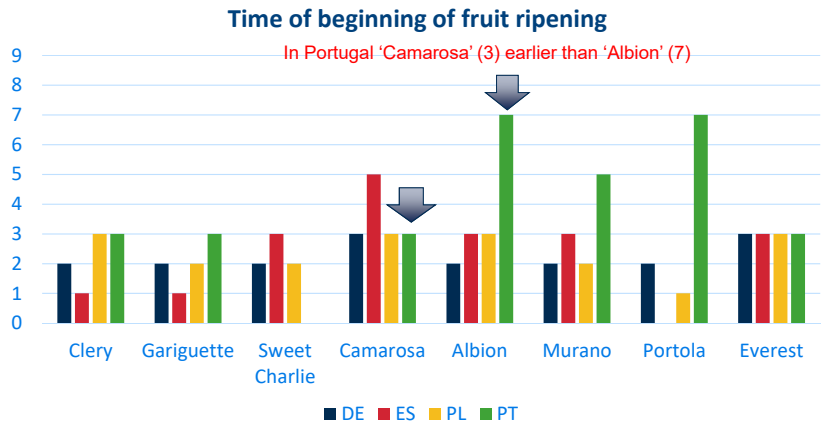
Results of 2017 - examples



very early	1
early	3
medium	5
late	7
very late	9

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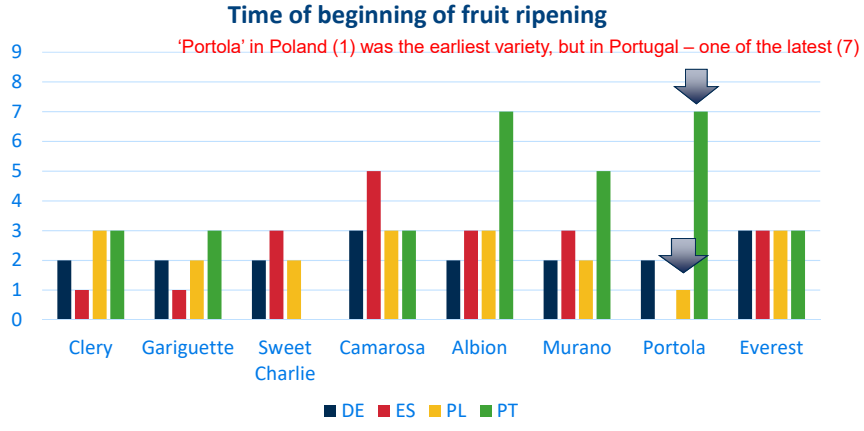
Results of 2017 - examples



very early	1
early	3
medium	5
late	7
very late	9

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Preliminary results of discussion

- **There might be a need to consider regional sets of example varieties**

Some varieties were not suited to testing conditions *'(Gariguette', `Everest', and 'Murano' have not produced sufficient fruit in Spain)*

- **The example varieties need to be updated**

Some varieties of the Protocol are very old and not available (*`Madame Moutot', 'Cambride Favourite' and 'Elsanta')*

- **New/different example varieties proposed for a number of states of expression**

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Preliminary results of discussion

- **Method of observation defined by the group for all characteristics** – to include the methods in TG
-
- **Reduction of scale** - examples
  - Leaf size
  - Stipule: anthocyanin coloration
  - Fruit: adherence of calyx
- **Addition of states of expression** – examples
  - Petiole: attitude of hair – state 'downwards' – note 4
  - Fruit: colour of core – state 'dark red' – note 4
  - Fuit colour: states 'whitish pink', 'whitish orange', 'light red'

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Preliminary results of discussion

- **Explanations to be added** – examples
  - Time of beginning of flowering: to avoid different interpretations to indicate "*Time when 50% of plants have at least one flower open*"
  - Fruit: shape (a grid) or split of the characteristic to shape of apex, shape of base…
  - Fruit: colour (explanation on which side sunny/shaded)
- **Bearing type** – very dependent on testing conditions, needs changes (to delete?, to replace by another/other characteristic(s)?)

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Outcome of the meetings and Programme for 2018 and 2019

- Information to breeders whose varieties are used in the project
- Submission requirements – more harmonised wording
- **Presentation of the project at the UPOV TWF**
- Compilation of data for 2018
- Final meeting of the project in 2019 in Angers
- **Revision of the UPOV TG for strawberry starting from 2019 under the leadership by the expert from Germany**
- Potential breeders' consultation on reorganisation of testing as a follow up project of the current project

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[End of Annex II and of document]