

Technical Working Party for Vegetables

TWV/56/6 Corr.

Fifty-Sixth Session

Virtual meeting, April 18 to 22, 2022

Original: English

Date: April 11, 2022

USE OF DISEASE RESISTANCE CHARACTERISTICS

Document prepared by an expert from France

Disclaimer: this document does not represent UPOV policies or guidance

The annex to this document contains a copy of a presentation “Harmorescoll - Towards a harmonized collection of reference material for DUS resistance tests”, to be made by an expert from France, at the fifty-sixth session of the TWV.

[Annex follows]

Harmorescoll

Towards a harmonized collection of reference material for DUS resistance tests

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With & for examination offices, initiatives, seed companies

CPVO-entrusted examination offices – funded



Partners – in kind



Initiatives – in kind

IBEB-EU, IWGP, MATREF, Plantum Isolate Collection

Harmorescoll project:

Funding: CPVO
Start: 1st January 2020
Kick-off: 17 March 2020
Duration: 36 months
Extension: 2 months (Feb. 2023)

Harmorescoll network – definitions & flow charts

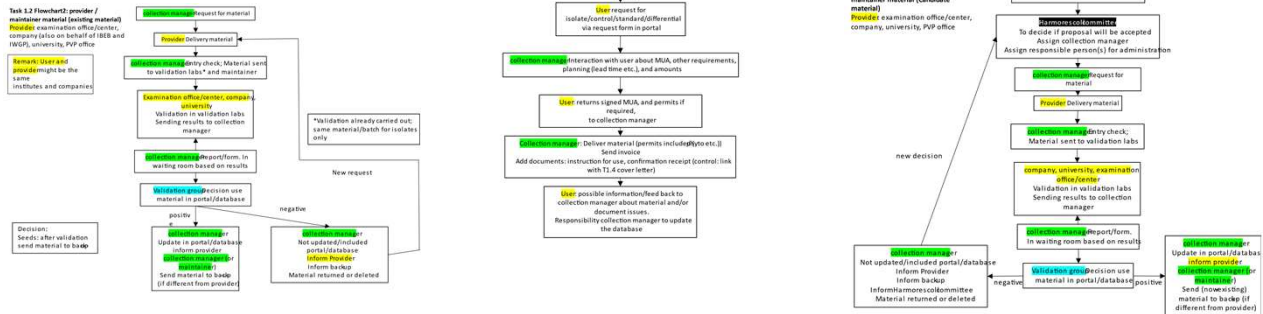
Flow charts:

#1: users

#2: provider / maintainer existing material

#3: provider / maintainer candidate material

#4: interaction chart (presented TWV/55)



Definitions:

1. Provider (Material)
2. Collection manager
3. Maintainer
4. Users
5. Harm. committee
6. Responsible persons
7. Validation Group
8. Back-up
9. Validation Labs
10. Material
11. Candidate material
12. Existing material
13. Harm. list of material
14. Portal/Database
15. Other collections
16. Cover letter



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Harmorescoll network - harmonized conditions to send reference material

Isolates	
ISF Isolate code	e.g. Fol: 1
Pest name	e.g. Fusarium oxysporum f. sp. lycopersici
Host crop or crops	e.g. Tomato
Origin*	Country and year
Client reference	Request date ...
Sending lab reference	...
Sending date	...
Description	e.g. Clean colony, growing on PDA medium
Amount	e.g. 2 Petri-dishes
Harmorescoll validation	Yes/No

Seeds	
Variety or line name	e.g. Monalbo
Crop	e.g. Tomato
Client reference	Request date ...
Sending date	...
Production reference	Lot number
Sending lab reference	Lab accession number
Description	e.g. sealed paper bags with seeds
Amount	1 unit; 100 seeds
Harmorescoll validation	Yes/No

Cover letter:

- Labelling the reference materials
- Delivery unit amounts

Documents attached:

- Phytosanitary certificate for seeds
- Transport document for quarantine pests

Request form:

- Intended use
- Delivery time request
- Quarantine measures
- Complete address



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Reference material – *why a need?*

genetic resources → breeding → new variety → registration / protection

DUS
(Distinctness, Uniformity and Stability)

In accordance with article 56(2) of Council Regulation (EC) 21 00/94, **technical examinations** which are initiated by the Community Plant Variety Office, or technical examinations for which the CPVO envisages to take over the results, **must be performed in accordance with the CPVO test protocols** which have been adopted by the Administrative Council.

In accordance with article 22(3) of implementing rules 874/2009, in the absence of a decision of the Administrative Council, or a provisional decision of the President of the Office, as to test guidelines established by the Office, the guidelines per genera and species of the UPOV shall apply.

In the absence of such guidelines, national guidelines developed by a competent authority in charge of the technical examination of a plant variety may be used, provided that the President of the Office agrees to such use. The competent authority shall submit those guidelines to the Office, and the Office shall publish them on its website.

> List of **CPVO technical protocols**

> In case there is no CPVO protocol, **UPOV test guideline** applies

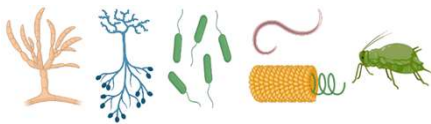
> In case there is no UPOV guideline, **National protocol** applies

CPVO protocols / UPOV guidelines

- harmonized protocols
- reference materials

Reference material – *definition & validation*

▪ Pest isolates



- identity, viability, purity (morphology; other methods optional)
- pathogenicity (on controls)
- pattern / race (on official differentials)
- timing defined for regular checks

▪ Controls, Differentials



- behaviour, pattern, uniformity (vs. reference isolates)
- seed health status (proved free of a set of pests)
- germination, viability (minimum level for R test)
- purity (free from impurities, seeds from other species)

Reference material – *inventory & availability of seeds*

Host species	Controls or Differentials	Available / in progress*	Currently absent*
Cabbage	0	-	-
Corn salad	3	2	1
Cucumber	32	-	32
French bean	30	25 / 2	3
Lettuce	36	20	16
Melon	56	16 / 3	37
Pea	36	17 / 4	15
Spinach	13	13	0
Pepper	61	12 / 3	46
Tomato	105	39 / 2	64
Tomato RS	10	1 / 6	3
Watermelon	5	-	5
Common millet	0	-	-
Japanese pear	0	-	-
Lucerne	18	-	18
TOTAL	405	145 / 20	240

*MATREF, IBEB, IWGP, PIC (Oct. 2021)

Validated material to check
(considering criteria defined)



Host species	To obtain
Cucumber	32
Melon	12
Pepper	21
Tomato	21
Tomato RS	3
Watermelon	5
Lucerne	18
TOTAL	107

Candidate material to validate
(considering the presence in the initiatives
of material with identical behaviour)

Reference material – *inventory & availability of pests*

Host species	Pest isolates	Available	Currently absent*
Cabbage	1	1	-
Corn salad	2	2	-
Cucumber	8	6	1
French bean	5	4	1
Lettuce	18	18	-
Melon	16	14	2
Pea	3	2	1
Spinach	17	17	-
Pepper	13	9	4
Tomato	25	18	6
Tomato RS	20**	17**	2**
Watermelon	4	-	4
Common millet	6	-	6
Japanese pear	1	-	1
Lucerne	6	-	6
TOTAL	125	91	32

*MATREF, IBEB, IWGP, PIC (Oct. 2021)
**also part of those listed for tomatoes.

Validated material to check
(considering criteria defined)



Host species	To obtain
Cucumber	1
French bean	1
Melon	2
Pepper	4
Tomato / Tom. RS	6
Watermelon	4
Common millet	6
Japanese pear	1
Lucerne	6
TOTAL	32

Candidate material to validate
(considering the presence in the initiatives
of material with identical behaviour)

Reference material – *partners' position to set up collections*



- to **continue with material already** in MATREF
- material to be organised by pathosystem (set of seeds + isolates) to facilitate their validation
- to invite Harmorescoll partners to position themselves on the remaining material
- agree to take a few more material if no partner declared interested; could ask for a subvention



under discussion
(internally & with Plantum IC)



pea material (official collection)
(seeds + isolates for Aps & Fop race1; not Ep)



Back-up of (some) isolates

	cabbage	cucumber	Bean	lettuce	melon	pea	pepper	tomato (+RS)	watermelon
CREA	Foc	viruses	Xap	Fol	Fom	Fop	Xcv	Fol, Pl, Pst, TSWV, Vd	Fon
INIA - CSIC		Cca, Ccu, CMV, CVYV, CYSDV	Cl, BCMNV	Bl, LMV	Fom, MNSV	Fop	PMMoV, TMV, PVY	Fol, For, Mi, Pst, TMV, Vd	



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Reference material – *prioritization to validate candidate material*

Priority Score	Available	Validated	Alternative	Obligation	Borderline	Requests	Bioassays
	yes	yes					
	yes	no	yes				
1	yes	no	no	no	no	few	1
2	yes	no	no	no	no	few	many
3	yes	no	no	no	no	many	1
4	yes	no	no	no	no	many	many
5	yes	no	no	no	yes	few	1
6	yes	no	no	no	yes	few	many
7	yes	no	no	no	yes	many	1
8	yes	no	no	no	yes	many	many
9	yes	no	no	yes	no	few	1
10	yes	no	no	yes	no	few	many
11	yes	no	no	yes	no	many	1
12	yes	no	no	yes	no	many	many
13	yes	no	no	yes	yes	few	1
14	yes	no	no	yes	yes	few	many
15	yes	no	no	yes	yes	many	1
16	yes	no	no	yes	yes	many	many

Elaboration of an **analytic tool**:

the higher score,
the **higher the priority for validation**



Experimental validation series

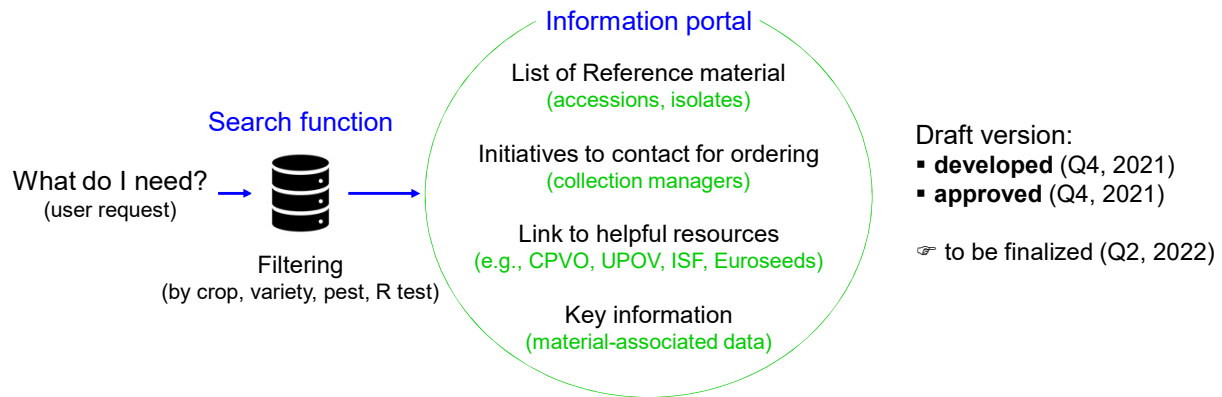


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Harmorescoll information portal – *online tool & website*



Follow-up 2022

▪ Network

Finalization of the definition in the governance & strategy
Definition of an economic model

▪ Reference material

Identification of the material to validate
Start of the experimental validation series

▪ Information portal

Finalization of the development of the website
Continuous publication of the list of reference material

Take home message

Harmorescoll wish to become a user-friendly platform

- Providing reliable information on Reference Materials
- To improve efficiency & trust in DUS resistance tests
- For the benefit of the EOs & the seed industry



Thank you to all the people involved

Work-package & task leaders

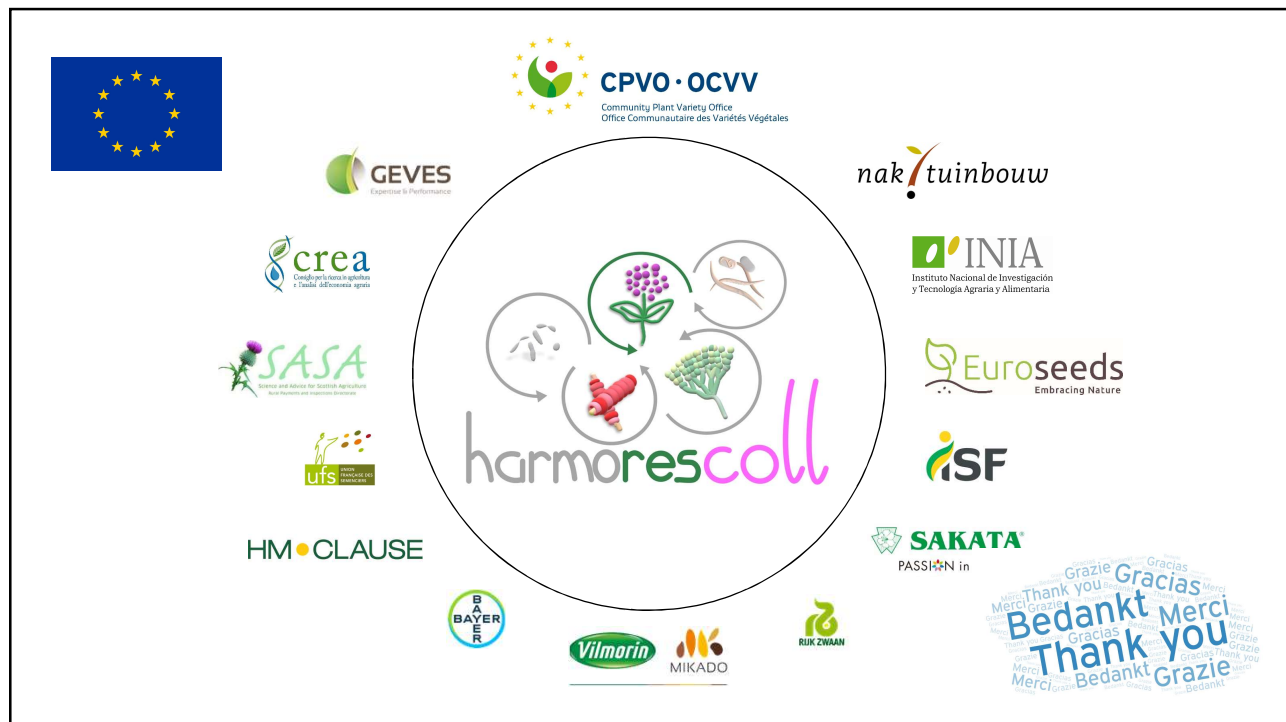
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Raquel Piqueras (INIA-CSIC)
Monique van Vegchel (Plantum IC)

Other members of the steering committee

Cécile Collonnier (CPVO)	Claudius Marondedze (Euroseeds)
Pascal Coquin (GEVES)	Bertrand Monsimier (Vilmorin-Mikado)
Perrine David (HM Clause)	Céline Morineau (CPVO)
Catherine Langat (Euroseeds)	Rose Souza Richards (ISF)



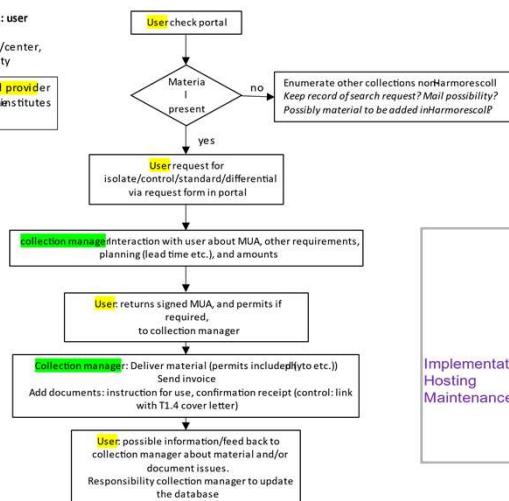
Harmorescoll network – flow charts (zoom)

1: users

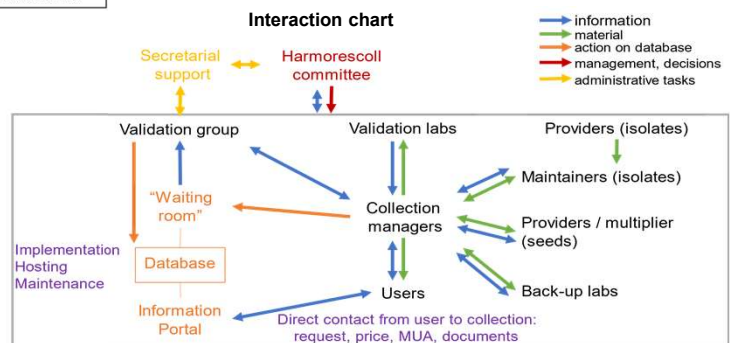
Task 1.2 Flowchart 1: user

User: company, examination office/center, PVP office, university

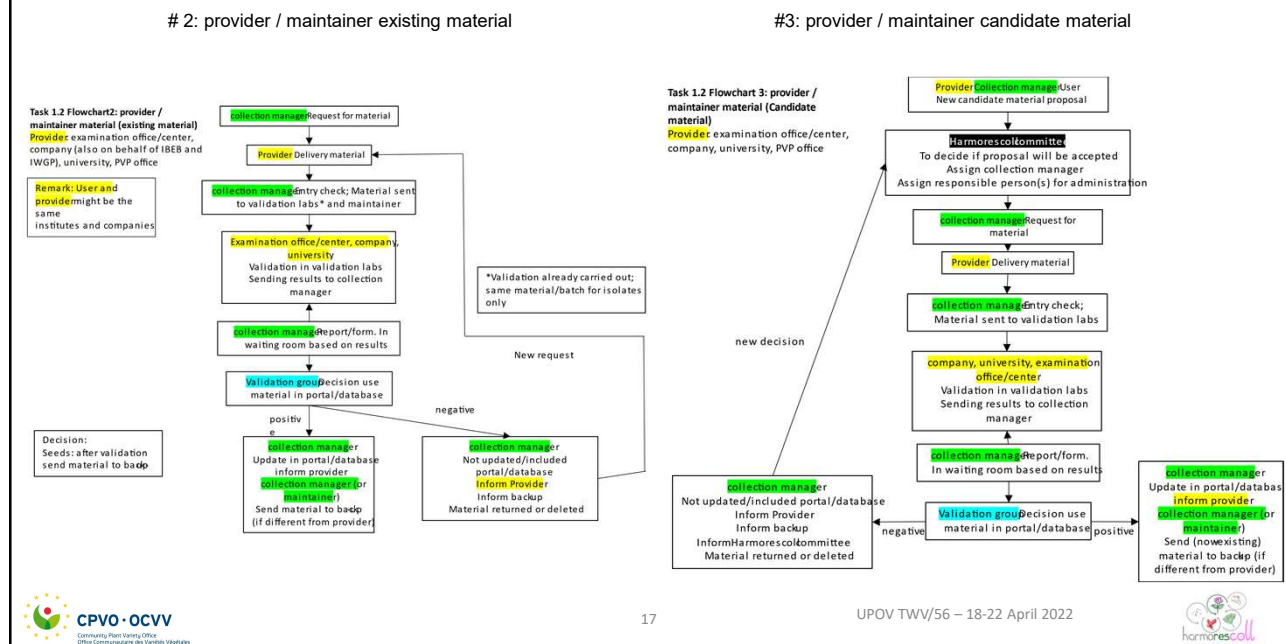
Remark: User and provider might be the same institutes and companies



#4: interaction chart



Harmorescoll network – flow charts (zoom)



[End of Annex and of document]