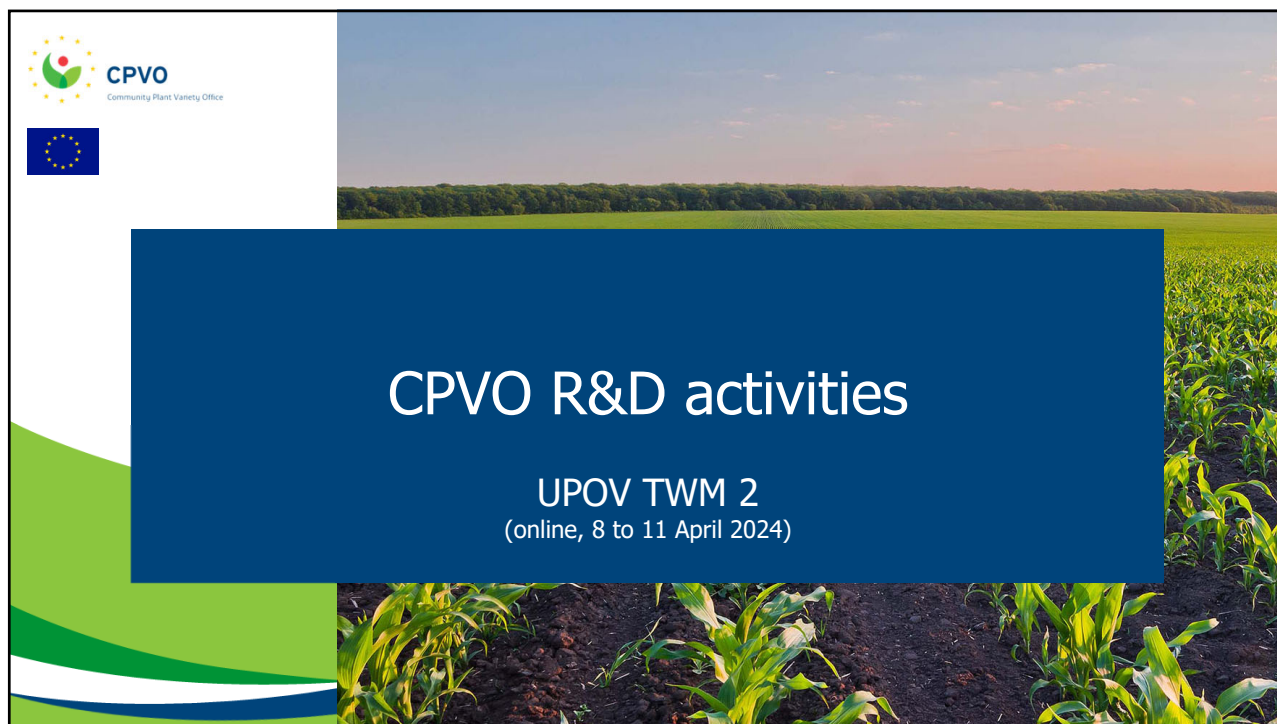


Technical Working Party on Testing Methods and Techniques**TWM/2/12****Second Session****Virtual meeting, April 8 to 11, 2024****Original:** English**Date:** March 19, 2024

CPVO R&D ACTIVITIES*Document prepared by an expert from the European Union**Disclaimer: this document does not represent UPOV policies or guidance*

The annex to this document contains a copy of a presentation “CPVO R&D activities”, to be made by an expert from the European Union, at the second session of the Technical Working Party on Testing Methods and Techniques (TWM).

[Annex follows]



1



2



3

This slide is titled 'IMODDUS working group activities'. On the left side, there is a photograph of a small green seedling with two leaves growing out of dark soil. The main content area on the right contains a bulleted list of activities. The CPVO logo is located in the bottom right corner of the slide.

IMODDUS working group activities

- ❖ "Integration of **MO**lecular **D**ata into **DUS** testing"
- ❖ CPVO BMT working group for the promotion of the use of bio-molecular techniques in DUS testing and variety identification.
- ❖ Set up by CPVO Administrative Council in the framework of its R&D Strategy in 2016 and confirmed in the revised Strategy in 2021.
- ❖ IMODDUS works as a **think-tank** for the development of strategies supporting the integration of BMT into DUS testing.
- ❖ IMODDUS has a **practical approach** which aims at assisting the CPVO in identifying and assessing **R&D projects proposals** for species where BMT could improve the **quality** and potentially the **cost efficiency of DUS testing**.

4



Meetings of IMODDUS WG

- 1st meeting Paris, April 2016
- 2nd meeting Paris, Jan 2017
- 3rd meeting Paris, April 2018
- no meeting in 2019, 2020 (INVITE, Covid19)
- 4th meeting online, Feb 2021
- 5th meeting Brussels, May 2022



6th meeting online, May 2023



5

IMODDUS 2023

- Update on the regulatory proposals for PRM (Plant Reproductive Material) and NGT (New Genomic Techniques)
- Monitoring of ongoing projects co-financed by CPVO
- What molecular DUS databases for the future?
→ **Dedicated meeting on 24 Nov 2023**
- INVITE: Improved models for marker-based evaluation of D and U
- National initiatives in the EU
 - Genomics in support of variety testing at the Institute of Applied Genomics (IGA) (Udine univ., IT)
 - AGRITECH project – Focus on Task “Development of innovative tools for genotype identity assessment and intellectual property protection” (Padua univ., IT)
- Use of molecular markers for DUS testing in non-EU EOs
 - New programs on barley and raspberry at NIAB (United Kingdom)
 - Experience of the PVP Office in Canada



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CPVO co-funded R&D projects

7


Durum wheat (DurdusTools)

FINISHED

CPVO co-funded projects

"Integration of molecular data into DUS testing in Durum wheat - development of a common online molecular database and a genetic distance calculation tool"

- Follow-up project of the Durdus project which allowed the definition of a genotyping protocol (microarray), the profiling of a large part of the collection and a preliminary genetic threshold.
- Aim: to consolidate the choice of the threshold, and set up a DB and an online interface for the calculation of GD, allowing the partners to select comparators for the field without handling any molecular profiles.
- Coordinator : **AGES** (AU)
- Project partners : INIA (ES), CREA-SCS (IT), NÉBIH (HU)
- Granted co-financing in Oct 2020, duration 2 years (Jan 2021 – June 2023)
(report available online, <https://cpvo.europa.eu/en/about-us/what-we-do/research-and-development>)



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Tomato



CPVO co-funded projects

"International harmonisation and validation of a SNP for the management of tomato reference collection"



- Coordinator: **NAKT**
- EU project partners : GEVES, COBORU, NÉBIH, INIA, DGAV, CREA and Euroseeds
- Non-EU offices (participate on their own funding) :
 - Beijing Sub-Center for DUS testing (CAAS), China
 - Korean Seed & Variety Service, Rep. of Korea
 - Center for Seeds and Seedlings, NARO (NCSS), Japan
- Granted co-financing in February 2019
Duration : 30 months + extension (breeders' consents) (July 2019 - Dec 2023)
(report available online, <https://cpvo.europa.eu/en/about-us/what-we-do/research-and-development>)

→ follow-up project for complete characterization of the collection and application following UPOV model *"Combining Phenotypic and Molecular Distances in the Management of Variety Collections"* (French bean approach)




9

HarmoresColl



CPVO co-funded projects

- Aim: setting up a coordinated system at the European level to give access to reference material (isolates, controls and differentials) for performing disease resistance tests for DUS in vegetable species.
- Coordinators : **GEVES** (FR) and **NAKT** (NL)
- Project partners : CREA (IT), INIA (SP), SASA (United Kingdom), Euroseeds, breeding companies = Bayer, HM Clause, Sakata, Enza Zaden, Rijk Zwaan
- Granted co-financing in Dec 2019, duration = 36 + 12 + 6 months (Jan 2020 - June 2024)



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Hydrangea



CPVO co-funded projects


"Harnessing molecular data to support DUS testing in ornamentals: a case-study on Hydrangea."

- Aim: develop an optimal molecular toolset that associates neutral and gene-specific markers to improve the management of the reference collection and secure field trials by checking the varietal identity of cuttings prepared from the collection before starting DUS examinations
- Coordinator : **GEVES**
- Project partners : Bundessortenamt (GER), INRAE (GDO-IRH, FR)
- Granted co-financing in Oct 2021, duration : 18 + 6 months (May 2022 - April 2024)



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ToBrAg





CPVO co-funded projects

"Updating DUS resistance tests (biotests and markers) according to pests' evolution:


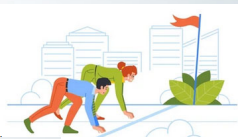
- *Setting up resistance tests to ToBRFV for tomato and pepper*
- *Improvement of resistance test melon/Aphis gossypii"*

- Coordinator : **GEVES** (FR)
- Project partners: EOs = NAKT (NL), INIA (ES), CREA (IT)
 - + breeding companies = BASF, Bayer, Enza Zaden, Gautier Semences, HM Clause, Rijk Zwaan, Sakata, Takii, Vilmorin
 - + research institute (INRAE, FR)
- Granted co-financing in Oct 2021, duration : 36 + 18 months (Feb 2022 - July 2026)



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SNPsNAP



**CPVO
co-funded
projects**


"SNP markers for guiding DUS testing in winter oilseed rape: Validating the new model"
= 3rd chapter of the rapeseed saga...

- First project validated a set of SNP markers for KasPAR assays on bulk samples as a tool for the management of the reference collection (concluded in 2018).
- Second project allowed the development of a new method to use genetic data in the two different testing systems, GAIA in France and COY in Germany: "new maize approach" (selection of varieties based on molecular networks) (concluded in 2021).
- Third project aims at validating the new model on fully genotyped collections.

- Coordinator : **GEVES** (FR)
- Project partners: BSA (DE), INIA (ES), UKSUP (SZ)
+ observers: COBORU (PL), Tystofte (DK), UKZUZ (CZ), NIAB (United Kingdom), Euroseeds



- Granted co-financing in Oct 2023, duration : 24 months (May 2024 – April 2026)




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Other initiatives




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Phenotyping tools for DUS testing

→ To come : **survey of the existing tools and practices** inside the network of EU EOs and coordinate discussions to identify common interests and support the elaboration of potential proposals by interested partners for future CPVO R&D calls...



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(Cf. dedicated presentations)

in 2024 :

- **4 WGs** on Phenotyping, Genotyping, VCU optimisation and harmonisation

For fine tuning and implementation of the developed tools + evaluation of their practical impact on variety testing.

- **Last annual meeting** in Firenze (IT) 11-13 June with **stakeholder session**.
- **Final conference** with **stakeholders** in Brussels end of Dec.



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CPVO provided input to the European Commission for the preparation of future calls in the program

Ambition = pursue the dynamic launched by INVITE with instruments adapted to examination offices' needs and breeders' expectations.



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