

Technical Working Party for Agricultural Crops**TWA/50/3****Fiftieth Session****Arusha, United Republic of Tanzania, June 21 to 25, 2021****Original:** English**Date:** June 29, 2021

REPORTS ON DEVELOPMENTS IN PLANT VARIETY PROTECTION FROM MEMBERS AND OBSERVERS*Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance*

1. The Technical Committee (TC), at its forty-seventh session, held in Geneva from April 4 to 6, 2011, agreed to request the Office of the Union to invite experts to submit written reports to the Office of the Union in advance of the Technical Working Party (TWP) sessions in order that a document containing those reports could be prepared by the Office of the Union. The TC noted that TWP experts would be invited to make a brief oral summary of their written report at the session and would also be encouraged to make reports under the agenda item "Experiences with new types and species", as appropriate. The TC also noted that TWP experts would have an opportunity to raise questions concerning matters of interest (see document TC/47/26 "Report on the Conclusions", paragraphs 9 and 10).

2. Written reports were invited by the Office of the Union in Circular E-21/040 of March 23, 2021. The following reports were received (in alphabetical order):

- Members of the Union: Annexes I to IV: European Union, Japan, Netherlands and the United Kingdom

[Annexes follow]

EUROPEAN UNION

Statistics for 2020

In 2020, the Community Plant Variety Office of the European Union (CPVO) received 3 427 applications for Community plant variety rights (CPVRs); 651 applicants filed applications for CPVRs. In 2020, the distribution between crop sectors was as follows:

- Agricultural, 979 applications (28.6%)
- Ornamental, 1 457 applications (45.5%)
- Vegetable, 688 applications (20.1%)
- Fruit 303 applications (8.9%).

In 2020, the CPVO granted 2 978 titles for Community protection; 29 010 titles were in force by the end of the year. National authorities from all over the world regularly base their decisions on applications for PVP on technical examinations carried out on behalf of the CPVO (international cooperation, takeover of reports). By the end of 2020 the CPVO had provided 7 743 technical reports to 60 countries.

Administrative Council (AC)

The AC met twice in April and September 2020. The members of the AC adopted particularly the following:

The new chair and vice-chair of the AC

AC Decision on the adoption of CPVO Technical Protocols

AC Decision on the postponement rules for fruit species applications

The AC members approved the prolongation of the current QAS audit cycle as well as the mandate of the 36 QAS technical experts by one year until the end of 2022.

The AC members approved the creation of a User' Working Group on IT projects.

The Commission was working on the extension of the duration of protection to 30 years for varieties of asparagus, ornamental bulb species and woody ornamentals.

International affairs

The CPVO organized a Seminar in Estonia dedicated to Farm-Saved-Seed (FSS) and in particular the functioning of the FSS system in Estonia and the neighboring countries. Such seminar aims to clarify the FSS concept throughout the EU and to encourage cooperation between farmers and breeders on the implementation of the right for information with the view to exercise compliance with the FSS mechanism.

The CPVO participated in several IP Key international outreach activities

- IP Key China: expert training and enforcement seminar
- IP Key LA: On-site events in February; Regional workshop on DUS examination and independence (Col; QAS)
- IP Key SEA: Awareness seminars for accession to UPOV 91
- CARIP: revision of PVR legislation in Dominican Republic
- OAPI: on-site event in February

AGRICULTURAL SECTOR

Administrative Council decisions on agricultural TPs in 2020-2021 (AC meetings, written procedures)

Revisions of existing CPVO Technical Protocols:	
<i>Brassica napus</i> L. emend. Metzg.	CPVO-TP/036/3
<i>Pisum sativum</i> L.	CPVO-TP/007/2-Rev.3
<i>Avena sativa</i> L., <i>Avena nuda</i> L.	CPVO-TP/020/3
<i>Gossypium</i> L.	CPVO-TP/088/2
<i>Dactylis glomerata</i> L.	CPVO-TP/031/1
<i>Chenopodium quinoa</i> Willd.	CPVO-TP/328/1

Statistics

The table hereunder shows the 10 most important agricultural crops over the last 5 years. In the long term, the order of the species is essentially unchanged except for Cannabis.

Species	2016	2017	2018	2019	2020	Total (1995-2020)
<i>Zea mays</i> L.	201	177	262	229	173	5183
<i>Triticum aestivum</i> L. emend. Fiori et Paol.	153	124	152	150	133	2307
<i>Brassica napus</i> L. emend. Metzg.	126	94	103	120	149	1829
<i>Solanum tuberosum</i> L.	79	71	84	68	72	1805
<i>Hordeum vulgare</i> L. sensu lato	69	72	93	100	75	1541
<i>Helianthus annuus</i> L.	86	53	59	40	56	1165
<i>Lolium perenne</i> L.	14	20	19	46	19	423
<i>Triticum turgidum</i> L. subsp. <i>durum</i> (Desf.) Husn.	26	16	22	13	25	377
<i>Beta vulgaris</i> L. ssp. <i>vulgaris</i> var. <i>altissima</i> Döll	21	9	19		11	375
x <i>Triticosecale</i> Witt.	19	17	20	21	16	287
Total	794	653	833	787	729	
<i>Cannabis sativa</i> L.	12	12	44	61	89	240

In the agricultural sector, rights granted based upon a technical examinations are some 25% of all application; in some 75% of the cases reports were taken over from other authorities.

The agricultural expert meeting

The CPVO held its annual meeting with EU agricultural experts virtually in October 2020. The meeting was attended by experts from nineteen examinations offices as well as a representative of the European Commission, Euroseeds, Plantum and NPZ. Next to the DUS technical examination related topics, and technical protocol discussions (see list above), “Maize: Replacement of FAO numbers by time of flowering” “Wheat: Elongated plants as “new” off-types” and “True Potatoes Seeds” were on the agenda. In 2020, a working group including the entrusted examination offices, EUROSEEDS and CPVO discussed the project of harmonization of National and CPVO technical questionnaires, and started with wheat, maize, sunflower and hemp.

The experts were provided by an update on the R&D projects: Development on SNP markers for Winter OSR, SNPs in Durum wheat for management of reference collection and were asked for proposals of potential R&D projects for IMODDUS. They were furthermore informed on the outcome of the field maize trial in Poland in 2020, performed by COBORU. Due to the COVID situation the planned technical workshop meeting was cancelled but experts met virtually and concluded that the parameter FAO number does not fulfil the conditions for setting the entrustment groups, particularly the fact that the FAO number is not assessed by EOs on inbred

lines would make it obsolete, and should therefore be replaced by the TP and TQ characteristic 'Time of anthesis' which is known to be correlated to the maturity of the ears. The expert agreed to make further investigations in order to identify the range of notes for time of anthesis for particular environments and agreed that natural environmental conditions would limit the scope of entrustment and there is no need to search for another parameters.

Ongoing projects R&D projects

'Developing a strategy to apply SNP molecular markers in the framework of winter oil seed rape DUS testing' Based on a first project called "Test of the potential use of SNPs markers on oilseed rape varieties", this follow-up project was approved in March 2019 for a duration of 24 months. In the first project, GEVES (FR) and NIAB (UK) selected and tested on different matrices a set of 500 SNPs to design reliable KASPar assays and confirmed the possibility to reliably use bulk samples of seeds in rapeseed. In this project, they continue the work to produce large and consistent molecular data sets on a wide number of WOSR varieties in order to reach an optimized SNP set. In collaboration with Germany, existing UPOV models and newly developed ones will be tested to use these markers for DUS. The approaches will be tested on the two different testing systems GAIA in France and COY in Germany. The final results will be presented and discussed with experts from all entrusted examination offices which were also partners to the pre-project. If the results are successful, a second follow up project would extend the genotyping to the whole collection and aim to validate and to apply the model chosen in the field. That implementation phase would include all entrusted EOs.

'Integration of molecular data into DUS testing in Durum wheat'

This project started in 2018 and ended in April 2021. The objective was to combine genotypic and phenotypic data to optimise the reference collection management by investigating the use of SNP markers of a commercial DNA chip. The coordinator was the Austrian examination office AGES. Project partners were INIA (ES); GEVES (FR); CREA-SCS (IT) and NEBIH (HU). Based on the results of the DURDUS field trials, it was concluded that a genetic distance between a candidate variety and a reference variety higher than 0,32 is a good indicator for distinctness. Such a clear conclusion on the threshold was, however, challenged when considering the results of the pairwise comparisons of the 2019-2020 DUS trials. To find a molecular threshold with a good compromise between safety and field savings, this issue needs further consideration. The partner EOs involved in an upcoming project (DURDUStools) will continue research in this area.

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

This follow up project started in January 2021 for a duration of 24 months. The aim of the follow-up project is to ensure the long-term usability of the results achieved in the DURDUS project, through the setup of a common online molecular database hosting DNA profiles of all varieties from the durum wheat reference collection and the development of an online genetic distance (GD) calculation tool available for the choice of comparators in DUS tests.

This system will be tested by the participating EOs when setting up their routine DUS growing trials.

'Development of a SNP marker set in Cannabis to support DUS testing'

This follow up project started in December 2019 for a duration of 24 months. Naktuinbouw as project coordinator submitted this project. Project partners are; GEVES (FR) and NEBIH (HU). The CPVO applications for *Cannabis sativa* L. varieties are increasing steadily, particularly those bred for pharmaceutical use. It is particularly demanding both in terms of time and money to import plant material for DUS testing of pharmaceutical varieties, which creates reluctance of titleholders to submit reference varieties. This project aims at continuing research work already undertaken by Naktuinbouw by identifying a SNP marker set for Cannabis. With the information and knowledge gathered in this project, a database could be setup in a follow up project to deploy a UPOV "French Bean" approach for the choice of the reference varieties to put in the DUS trials.

[Annex II follows]

JAPAN

1. Number of applications in 2020

Year	Number	(2020/2019)	Agricultural crops	(2020/2019)
1978 to 2020	35,156	-	2,611	-
2019	822		67	
2020	713	(86.7%)	70	(104.5%)

Top 5 of application for Agricultural crops in 2020

Rice 30, Soya bean 6, Sweet Potato 5, Maize 4, Ryegrass 3, Sesame 3, Wheat 3, Sorghum 3

2. Number of granted in 2019

Year	Number	(2020/2019)	Agricultural crops	(2020/2019)
1978 to 2020	27,574	-	2,179	-
2019	758		53	
2020	591	(78.0%)	46	(86.8%)

Top 5 of granted for Agricultural crops in 2020

Rice 16, Potato 11, Tea 4, Sesame 3, Ryegrass 2, Sweet potato 2, Wheat 2

3. National test guidelines harmonized with UPOV TGs in 2020

Genera and Species (0)

4. National test guidelines developed for new genera and species in 2018

Genera and Species (0)

Web-site: http://www.hinshu2.maff.go.jp/info/sinsakijun/botanical_taxon_e.html

5. Other reports

- ✓ Japan PVP and Seed Act was amended in December 2020. Main items are the followings;
 - In order to protect PBR properly, it was clarified that to export protected propagating materials should be authorized by PBR holders (since April 1, 2021).
 - In order to enable PBR holders to exercise their rights properly, optional exception related to the Article 15 (2) of the 1991 Act of the UPOV Convention will not be applied (since April 1, 2022).
- ✓ Japan continuously provides other UPOV members with examination reports under the Memorandum of Cooperation (MOC). We have agreed the MOC with 15 members at April 2021.
- ✓ Since establishment of the East Asia Plant Variety Protection Forum in 2008, Japan continuously support Forum member's activities and will enhance support to establish effective PVP system consistent with the UPOV Convention by strengthening national PVP system and by contributing to facilitate harmonization of application and examination procedures and to enhance efficient PVP cooperation under the 10-Year Strategic Plan of the Forum. Especially, Japan, Viet Nam and other partners are working together on the pilot project to develop a single online application Platform "e-PVP Asia" for submitting one application data to multiple PVP Offices. "e- PVP Asia" includes the function to facilitate cooperation in examination

among participating countries (UPOV members and provisional UPOV members), that applicant can select country where DUS test would be done, and the report of the DUS test would be transferred to other countries.

- ✓ Since 2016, based on the Memorandum of Understanding, Center for Seeds and Seedlings, NARO (NCSS) and Naktuinbouw have established Calibration Manuals for DUS technical harmonization. "Calibration manual for chrysanthemum" was finalized in 2020, and a total of 9 Calibration Manuals are currently available for third country through both of websites. NCSS and Naktuinbouw agreed to extend the MOU for 3 years, for the purpose of publication and revision of Calibration Manuals, on March 24, 2021.

[Annex III follows]

NETHERLANDS

NAKTUINBOUW VARIETY TESTING DEVELOPMENTS

- As from April 2020 the DUS team was enlarged with 1 more DUS colleague. One colleague retired. The team now consists of 39 employees, 2 of them are managers, 5 of them work on disease resistance. The Department of Variety Testing includes also a support team, a trial management team and a project team. In total there are 74 employees.
- The Variety Testing Department yearly offers a number of courses around Plant Breeders' Rights and/or Listing. Last year all courses have been provided online via Video.
- For these courses we have a new professional system and software tool: Naktuinbouw Academy. This works very well for E-learning and online courses (see also below in DUS projects).
- From October 30, 2020, Marian van Leeuwen is chairperson of the UPOV-TWV.
- In 2020 Henk de Greef finished his task as chairperson of the UPOV-TWO.
- A stricter hygiene protocol for staff and visitors has been applied in the DUS fields and greenhouses. This is to prevent unwanted plant diseases.
- From June 2020 variety descriptions are linked to varieties in the Dutch Variety Register: <https://nederlandsrassenregister.nl/>.
- We have new laboratory facilities for the preparation of disease resistance tests used in DUS.
- During the COVID-19 crisis, the daily business of the employees of the Variety Testing department is not disturbed. They succeed to do the DUS work at the normal quality level and are also flexible in the contacts with the applicants.
- Applicants more and more use the online systems of UPOV and CPVO for filing their applications for listing and/or plant breeders' rights. Nowadays it is possible to apply for Plant Breeders' Rights for all species through UPOV PRISMA as well as for Listing in the Netherlands. Up to now we received a limited number of online applications through UPOV PRISMA. At this moment it is possible to apply for listing/plant breeders' rights in the Netherlands for 87 species through the CPVO online system. In 2020 we received 719 applications for Listing/Plant Breeders' Rights in the Netherlands through the CPVO online system. In 2020 51% of the National applications were filed by electronic means, mainly due to a reduced application fee (in 2019 25%).

Number of applications received

In 2020, 2793 applications were received for testing for the first year for National listing, and for National or European Plant Breeders' Rights. Applications of the same variety for Listing as well PBR, in vegetables and in agricultural crops are split in this table.

2020	NL listing	NL PBR	EU PBR	TOTAL
<i>Agriculture</i>	265	94	80	
<i>Vegetable</i>	842	529	131	
<i>Ornamental (incl. trees)</i>		214	638	
TOTAL	1107	837	849	2793

DUS PROJECTS

Below a selection of the DUS projects at Naktuinbouw.

- Digitise
 - Naktuinbouw Academy: a digital training platform. Some of the trainings that were organised in traditional physical meetings are organised now in a digital manner. A good example is the Plant Breeders Rights for Food security and Economic Development training course with Wageningen University. But also internal trainings for PVP-officers of Naktuinbouw are organised this way.

- In 2020 a lot of effort was put into the development of general database systems to harmonise data for the purpose of exchange of controlled data between partners.
- With the help of new tools it will be possible to organise visits to the trials at a distance. Naktuinbouw expects to facilitate this possibility in the course of 2021.
- EU cooperation: Database Melon, Harmorescoll and INVITE
 - An EU database for melon varieties is developed by cooperation between France, Spain, Portugal, Slovakia and the Netherlands. The development is funded by CPVO. In 2021 the project will be finished and continuation in cooperation is expected.
 - Harmorescoll: in this project the reference material for obligatory disease resistance tests will be harmonized.
 - The EU project on the improvement on DUS and VCU testing has started. Naktuinbouw is one of the partners in this program.
- International cooperation. Calibration manuals. Naktuinbouw cooperates since 2016 with NCSS Japan on the harmonisation of Dutch Calibration Books and Japanese Testing Manuals in a 5 years working plan. In 2019, Tomato and Gerbera were discussed. Due to COVID the cooperation for tulip in 2020 was postponed. In an online meeting in 2021 tulip was finalized. Continuation of cooperation with Japan is agreed.
- Databases: Naktuinbouw develops SNP-databases in French bean, rose, lettuce, onion, hemp, tomato and perennial ryegrass. Some databases are developed nationally, others in international projects. The projects are funded by amongst others the Dutch board for plant varieties and CPVO.
- Other projects: DUS testing of garlic from seeds; development of DNA markers tests for disease resistance in tomato for *Passalora fulva* (*Fulvia fulva*), Lettuce (LMV); testing of organic varieties;

INTERNATIONAL COOPERATION

- In 2020 only a limited number of PVP projects was carried out.
- In cooperation with CPVO, Naktuinbouw joined the IPKey-project China. Training was organised digitally with direct translation.
- Digital inception mission (14 days) to the Philippines was organised to National Seed Technology Park.
- In April 2021 a 2-year EU training project with the Ukraine has started. Latvia is the lead project partner, Poland and the Netherlands (Naktuinbouw) are the junior partners in this project with amongst others a focus on Plant Breeders' Rights.
- In 2021 a 4-year project is started by the Wageningen university on the Nigerian Seed sector. The Nigerian government and Naktuinbouw are involved on the topics of Plant Breeders rights and variety registration.

PVP DEVELOPMENT PROGRAM (TOOLBOX)

- This is a tool to help countries to develop their Plant Breeders' Rights system. The Dutch Ministry makes funds available for the implementation of this program. For more information about this program of possible cooperation please contact: PVPToolbox@naktuinbouw.nl

PLANT BREEDERS RIGHTS FOR FOOD SECURITY AND ECONOMIC DEVELOPMENT TRAINING COURSE.

- More information <https://www.wur.nl/en/show/Plant-Breeders-Rights-for-Food-Security-and-Economic-Development.htm> or contact: l.pinan.gonzalez@naktuinbouw.nl

[Annex IV follows]

UNITED KINGDOM

Report on the activity of the United Kingdom Plant Varieties and Seeds Office in Cambridge and the examination centers of NIAB, SASA and AFBI. The Plant Varieties and Seeds Office is part of the Service Delivery Directorate of the Animal and Plant Health Agency (APHA), an executive agency of the Department for Environment, Food and Rural Affairs (Defra). Contact details and phone numbers are available on Gov.UK website where all Government departments now have their website details. <https://www.gov.uk/guidance/plant-breeders-rights#contact-the-plant-variety-rights-office>

Across all the United Kingdom trial stations, approximately 750 candidate varieties were under test for National Listing and/or PBR in the 2020-2021 growing season. Most applications were for cereal crops and winter oilseed rape, but there were also applications for ornamentals, vegetables, field peas, potatoes, field beans, sugar beet, herbage and other fodder crops.

From the 1st January 2021, all United Kingdom PBR and National List applications must be submitted through UPOV PRISMA. So far, the United Kingdom has benefitted from using UPOV PRISMA to process applications and acknowledges the support and cooperation from the UPOV Office to implement and develop this application tool whilst facilitating the United Kingdom system where possible.

Despite the COVID-19 pandemic, DUS trials continued in the United Kingdom during the 2020-2021 growing season. Government health and safety guidance was followed to ensure the safety and well-being of staff. With suitable adaptation, it was possible to complete almost all trials.

On the international front, Variety Testing staff at the different examination centers continue to be fully committed to working with our colleagues in Europe and within UPOV, and we continue to be involved in the Community Plant Variety Office of the European Union (CPVO) projects such as 'Harmorescoll' which aims to facilitate access to reference material for performing disease resistance tests within DUS examinations for vegetable crops. There is also involvement in two EU Horizon 2020 funded projects with NIAB, SASA and BioSS contributing to the INVITE project, and APHA and AFBI to INNOVAR.

The United Kingdom continues to support the UPOV online courses with technical and administrative staff throughout the United Kingdom taking the distance learning opportunities through DL205 and DL305. Colleagues across the United Kingdom have also benefitted from the recently arranged UPOV Technical Working Parties Preparatory Webinars.

Agricultural crop DUS testing in the United Kingdom is conducted at NIAB, Cambridge; AFBI, Crossnacreevy and SASA, Edinburgh.

Updated software for the recently accepted Splines COYU analysis is under test with a view to implement across all relevant crops in the near future.

NIAB have observed variation within plants of the wheat (*Triticum aestivum*) characteristic "Apical rachis segment: area of hairiness on convex surface" (document TG/3/12, characteristic number 21). On the request from United Kingdom breeders, there is a concerted effort in evaluating new (or revisiting old) characteristics for barley (*Hordeum vulgare*). Please contact Vanessa McMillan (vanessa.mcmillan@niab.com) if you would like more details or to share experience on either subject.

Initial investigations into the use of disease resistance (clubroot) in oilseed rape (*Brassica napus* L. *oleifera*) have shown promise in potential use to differentiate between similar varieties that are not considered clearly distinct using the standard characteristic set. Please contact Alex Talibudeen (alex.talibudeen@niab.com) if you would like more details or to share experience.

[End of Annex IV and of document]