

Technical Working Party for Ornamental Plants and Forest Trees TWO/56/2
**Fifty-Sixth Session
Virtual meeting, April 29 to May 2, 2024**
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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-24/022 of March 4, 2024. The following reports were received (in alphabetical order):

- Members of the Union: Annexes I to VII: European Union, France, Japan, Netherlands (Kingdom of the), New Zealand, South Africa and the United Kingdom

[Annexes follow]

EUROPEAN UNION

CPVO STATISTICS AND ACTIVITIES

Statistics

The Community Plant Variety Office of the European Union (CPVO) applications decreased slightly in 2023, with 2866 applications in total (previous year: 3196, -10.3%).

The distribution between crop sectors was as follows:

- **Ornamental, 1088 applications (38%), previous year (1267 applications, 40%),**
- Agricultural, 841 applications (29.5%), previous year (1003 applications, 31%),
- Vegetable, 670 applications (23%), previous year (664 applications, 21%),
- Fruit, 267 applications (9.5%), previous year (262 applications, 8%).

The decrease in the number of applications was in the ornamental sector (-31% over 4 years) and in the agricultural (-29% in the past 2 years).

In 2023, the Office granted 2719 titles for Community protection (CPVR); 30 939 titles were in force by the end of the year. National authorities from all over the world regularly base their decisions on applications for CPVRs on technical examinations carried out on behalf of the CPVO (international cooperation, takeover of reports). In 2023, the CPVO provided 1266 technical reports to 38 countries (550 in 2022), the five countries from which most requests emanated were United Kingdom, Morocco, Canada, Kenya, and Switzerland.

More statistics are available on the CPVO website: [Statistics | CPVO \(europa.eu\)](https://cpvo.europa.eu/statistics)

Administrative Council (AC)

The CPVO is supervised by an Administrative Council (AC) comprising representatives of the Member States and the European Commission and their alternates. In 2023, the members of the AC adopted the following:

- AC agreement for cooperation with Japan (MAFF) for the take-over of DUS reports of *Podocarpus macrophyllus* (Thunb.) Sweet, *Camellia sinensis* (L.) Kuntze, and several species of Mushrooms (*Flammulina velutipes* (Fr.) Sing, *Grifola frondosa* (Fr.) S. F. Gray, *Hypsizygus marmoreus* (Peck) Bigelow, *Lentinula edodes* (Berk.) Pegler, *Pleurotus eryngii* (DC.) Qué.).
- AC agreement for cooperation with Australia (Plant Breeder's Rights Office) for the take-over of DUS reports of a variety of *Musa acuminata* Colla – GM variety, 'QCAV4' resistant to Panama disease TR4.
- Agreement to set-up a working group to review of the CPVO Policy on Plant material submitted for DUS testing. The CPVO policy on the status of plant material used for DUS testing purposes was discussed within the CPVO meeting with examination offices in 2023 and should be approved by the AC in spring 2024.
- Creation of a denominations working group to address the need for inclusion of plant genetic resources in the CPVO's analysis of denomination proposals.
- Agreement on proposal to European Commission regarding the fee regulation: increase or new fees for examinations, appeals, nullities, objections and fee group merger (adopted; OJ L 147, 7.6.2023, p. 65-67)
- In the course of 2023, the following technical protocols were adopted by the AC:

kangaroo paw	<i>Anigozanthos</i> Labill.; <i>Macropidia fuliginosa</i> (Hook.) Druce	CPVO-TP/175/1
walnut	<i>Juglans regia</i> L.	CPVO/TP-125/1
anthurium	<i>Anthurium</i> Schott	CPVO/TP-086/1
potato	<i>Solanum tuberosum</i> L.	CPVO/TP-023/4
peach, nectarine	<i>Prunus persica</i> (L.) Batsch	CPVO/TP-053/2-Rev

berberis	<i>Berberis</i> L.; excluding <i>Berberis aquifolium</i> Pursh, <i>Berberis bealei</i> Fortune, <i>Berberis japonica</i> (Thunb.) Spreng., <i>Berberis napaulensis</i> (DC.) Spreng., <i>Berberis oiwakensis</i> (Hayata) Laferr., <i>Berberis pumila</i> Greene, <i>Berberis repens</i> Lindl., or hybrids between these species and other <i>Berberis</i> species	CPVO-TP/068/1
garlic	<i>Allium sativum</i> L.	CPVO/TP-162/2
kohlrabi	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L. (<i>Brassica oleracea</i> Kohlrabi Group)	CPVO/TP-065/2
leaf chicory	<i>Cichorium intybus</i> L. var. <i>foliosum</i> Hegi	CPVO/TP-154/2-Rev
apricot	<i>Prunus armeniaca</i> L., <i>Armeniaca vulgaris</i> Lam.	CPVO/TP-070/3

ORNAMENTAL SECTOR

Statistics

The table hereunder shows the 10 most important ornamental crops over the last 5 years.

Species	2019	2020	2021	2022	2023	Total 1995-2023
<i>Rosa</i> L.	242	175	174	168	200	5301
<i>Chrysanthemum</i> L.	140	121	78	83	83	4065
<i>Phalaenopsis</i> Blume	112	153	108	130	102	1810
<i>Calibrachoa</i> Cerv.	60	46	67	65	33	1694
<i>Lilium</i> L.	35	21	14	36	18	1408
<i>Gerbera</i> L.	54	44	18	29	15	1266
<i>Dianthus</i> L.	35	40	48	38	15	1170
<i>Impatiens</i> L.,	12	16	12	9	10	1034
<i>Anthurium</i> Schott,	15	30	22	14	40	921
<i>Hydrangea</i> L.	51	46	36	53	22	790
Total per year	756	692	577	625	538	

The ornamental expert meeting (OEM)

The CPVO held its annual meeting with European Union ornamental experts on 18/19 October 2023 in cooperation with the French Examination office GEVES. The meeting was attended by experts from seven examinations offices as well as by representatives of the breeder's organisations. The group discussed several DUS technical examination related topics - technical protocols (see list above):

- Consideration of species material in the Distinctness assessment
- preparation of reports and variety descriptions
- Assessment of Uniformity of QN characteristics in cross-pollinated, seed-propagated ornamental varieties
- revision of the general submission requirements
- scope of national test guidelines

Ongoing R&D projects

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

The CPVO decided to provide 176,596 EUR (80% funding) to the project coordinated by the GEVES (FR); the Bundessortenamt (DE) is partner. The project is scheduled to run from May 2022 until June 2024.

The project aims at:

- 1) Genotyping (a large part of) the living reference collection maintained by the Gaston Allard arboretum Angers and the reference collection maintained by the BSA
- 2) Identifying SNP markers:
 - a. To check the variety identity upon renewal of the living reference collection
 - b. To predict the phenotype of candidate varieties
- 3) To select reference varieties for the growing trial: UPOV-BMT model: “Combining phenotypic and molecular distances in the management of variety collections”

All reports of finalized R&D projects are published on the CPVO web site:
<https://cpvo.europa.eu/en/about-us/what-we-do/research-and-development>

[Annex II follows]

GEVES is the Examination Office of France, in charge of DUS and VCUS evaluation of new plant varieties, and in charge of quality testing of seeds.

GEVES website can be consulted here www.geves.fr

Description files can be found on the website for the varieties listed on the French catalogue. <https://www.geves.fr/catalogue-france/>

You can subscribe to our NEWSLETTER available both in French and in English to receive the latest information on GEVES's expert activities in plants and seeds, at national and international levels. Please subscribe here: <https://www.geves.fr/newsletter-en/>

The DUS activity, either in the framework of national listing, or PBR, or in the framework of international cooperation for DUS testing, has slightly decreased in 2023 compared to previous years. Main activity remains on agricultural species. Detailed figures can be found on the annual report available on our website.

In total in 2023, GEVES carried out more than 3300 DUS cycles, mainly in its premises.

Crop sector	Number of DUS cycles in 2023	Main species tested
Agricultural	2330	Maize, wheat, oilseed rape, barley, sunflower, sorghum
Vegetable	435	Lettuce, tomato, melon, cauliflower, pepper, squash
Fruit	320	Peach, vine, apple, sweet cherry, apricot, Japanese plum, pear
Ornamental	230	Hydrangea, Chrysanthemum, Buddleja, Nerium, Lavandula, Salvia

The International System of Cooperation for DUS is active and efficient. For more information, the international cooperation service of GEVES can be contacted here: clarisse.leclair@geves.fr and camille.zitter@geves.fr

In 2023, the international cooperation service of GEVES received more than 1100 applications, mainly from the EU but also from all over the world. 70% of the requests are take-over requests and the DUS reports are then sent according to document TGP/5, Sec.6 "UPOV Report on Technical Examination and UPOV Variety Description".

In addition to that, the French National Office for PBR (INOV) has received 110 applications in 2023, out of which 95% were tested for DUS by GEVES.

INOV is involved in UPOV PRISMA for all genera and species. Contact INOV: inov@geves.fr

Regarding the use of molecular markers, GEVES is using in 2023 in routine molecular markers for the management of reference collection according to UPOV guidance model "Combining Phenotypic and Molecular Distances in the Management of Variety Collections", for maize, sorghum, spring barley.

Projects are being currently led on Oilseed rape and Hydrangea.

For more information on BMT, please contact: GEVES BIOGEVES rene.mathis@geves.fr.

Regarding the use of disease resistance characteristics, GEVES uses in routine genetic disease resistance characteristics, processed in bio assays, for DUS results. It provides also services, facilities, protocols, identified standards and strains for such activities to Examination Offices and seed companies, all over the world. For more information, please contact: GEVES SNES sophie.perrot@geves.fr

Research activities: GEVES concentrates on applied research, with projects aimed at developing, improving, and harmonizing methods for seed quality analysis and plant variety testing at a national, European and international level. Our research activities can be divided into three main areas: performance and value of new plant varieties, variety description, and seed quality. These activities draw on GEVES's expertise in phenotyping, pathology, molecular biology and data science.

At national level as well as European level, GEVES leads or contributes to several R&D projects, such as : H2020 INVITE, SUCSEED, H2022 BELIS, PHENET, HARMORESCOLL...and many others. Regarding Ornamentals: GEVES leads the CPVO project "*Harnessing molecular data to support DUS testing in ornamentals: a case-study on Hydrangea*".

International cooperation: GEVES staff regularly contribute their expertise to international cooperation programs aimed at creating or developing systems for the protection or registration of varieties and seed certification. In 2023, these actions were particularly concentrated on the African continent: Algeria, Togo, Ghana, Senegal... Video-conferencing, face-to-face meetings and discussions around plants in trials provide an opportunity to discuss a wide range of subjects, such as the conduct of DUS and VCUS trials on numerous species, the use of GAIA software in DUS, the use of molecular biology to study varieties, and the creation and management of variety collections for examination purposes. More generally, these activities may also concern the adoption and implementation of regulations relating to the intellectual property of plant varieties in accordance with UPOV international standards.

The GEVES contribution to the CPVO

At European level, GEVES experts have played an active part in the various technical working groups, in drawing up protocols, in consolidating the operating rules of the examination offices with the CPVO, and in considering future developments through several surveys, whether for ornamental, fruit, agricultural or vegetable species.

GEVES hosted the second day of the CPVO's annual meeting of ornamental plant experts at its Brion testing station. The CPVO, associations representing breeders and European examination offices visited the facilities and DUS trials conducted on ornamental plants. This was an opportunity to discuss the DUS of the chrysanthemum species. The experts from the various countries were able to share their knowledge about the 351 chrysanthemum varieties present in the GEVES trial, not forgetting the 1400 or so varieties in the collection kept in an insect-proof greenhouse.

GEVES has also played an active role in ongoing discussions on the use of molecular biology in DUS trials and on the opportunity to create future molecular databases shared between European examination offices. On the basis of its expertise and experience, GEVES has reaffirmed the need for transparency of methods for such tools.

GEVES involvement in UPOV

Every year, GEVES is involved in UPOV to provide its technical expertise in DUS and DUS-related methods. In 2023, GEVES was also involved in the webinars prior to the UPOV working groups, giving two presentations: one on the GEVES GAIA software during the webinar on 'Selecting similar varieties using electronic tools', and the other on the French maize DUS system with applicant participation during the webinar on 'Involving breeders in DUS testing'.

GEVES was also involved in the working group responsible for support in DUS testing (WG-DUS), which led to concrete recommendations being made to the UPOV Technical Committee with a view to increasing the participation of the Union's new members in the work of the Technical Committee and reorganising the work of the TWP groups.

In 2023, GEVES was more heavily involved in fruit species, hosting the TWF working group in Nîmes from 3 to 7 July 2023. The hybrid format enabled 73 people from 28 UPOV member countries and 2 observer organisations to take part. On the floor, 35 participants from 18 countries or organisations contributed to the debates. GEVES presented the organisation of DUS for fruit species in France. A technical day of visits focused on DUS practice. Participants were invited to see DUS trials on peach, apricot and Japanese plum and visited a nursery. GEVES's Carole DIRWIMMER is the new Chair of the UPOV Technical Working Party for Fruit crops (TWF) for the next 3 years.

National test guidelines developed for Ornamental crops in 2022-2023: Arbutus, Billardiera, Choisya, Cistus, Elaeagnus, Escallonia, Helenium, Heliopsis, Heptacodium, Kniphofia, Laurus, Mahonia, Ornamental Pyrus, Phytgelius, Philotheca, Rhodanthemum, Rosmarinus, Saxifraga, and Vitex.

On-going in 2024: Ceanothus, Cenchrus, Ornamental Banana, Senna and xPyracomeles.

JAPAN

1. Number of applications in 2023

Year	Total number	(2023/2022)	Ornamental	(2023/2022)
1978 to 2023	37206	-	29377	-
2022	683		496	
2023	591	(87%)	418	(84%)

Top 5 of application for Ornamental in 2023

Chrysanthemum 71, Rosa 62, Dianthus 32, Hydrangea 30, Anthurium 18

2. Number of granted in 2023

Year	Number	(2023/2022)	Ornamental	(2023/2022)
1978 to 2023	29992	-	23481	-
2022	672		482	
2023	497	(74%)	412	(85%)

3. National test guidelines harmonized with UPOV TGs in 2023

Common name of plants (6)
Kiwifruit, Japanese tea, Hemp, Timothy grass, Peach, Rye

4. National test guidelines developed for new type of species in 2023

Genera or Species (4)
<i>Aloe</i> L., <i>Corchorus olitorius</i> L., <i>Nephrolepis exaltata</i> (L.) Schott, <i>Pinellia ternata</i> (Thunb.) Makino

Web-site: https://www.maff.go.jp/j/shokusan/hinshu/info/sinsa_kijun_jp.html

5. Other

- ✓ Japan continuously provides other UPOV members with examination reports under the Memorandum of Cooperation (MOC). Japan had provided 47 DUS examination reports in total to other countries in 2023.
MAFF and United States Department of Agriculture (USDA) had signed MOC for cooperation in DUS examination in 2023. It could be used for other DUS result to own DUS examination.
In addition, MAFF and CPVO had also signed MOC for cooperation in DUS examination for Japanese tea, Mushrooms and Podocarpus. It could be used Japan's DUS result for DUS examination in CPVR.
- ✓ 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 lettuce ver.2" was finalized in 2023, and it will be published through both of websites. With revision of this, a total of 10 Calibration Manuals will be available for third country.

[Annex IV follows]

NETHERLANDS (KINGDOM OF THE)

Naktuinbouw Variety Testing developments

- There are some fundamental changes in the management of the DUS team of the variety department: Raoul Haegens is the new head of the Variety Department (to replace Bert Scholte who retired). Armanda Boere is the new Unit manager (to replace Raoul Haegens). Marco Hoffman is the new Technical Liaison Officer (TLO).
- As from January 1, 2024, Naktuinbouw works within the new organizational structure (so called TON2024). One of the fundamental changes is that the teams become more self-organizing.
- The DUS team now consists of 40 employees, including one unit manager, three cultivation managers and 4 employees specialized in disease resistance. The Unit Variety Testing includes also a support team, a trial management team and a project team. In total there are 70 employees and supplemented with temporary (circa 18) staff in summer.
- In 2024 facilities for resistance testing will be expanded and a new drying and storage room will be built for onions.
- The Variety Testing Unit yearly offers a number of courses on Plant Breeders' Rights and/or Listing. During the COVID epidemic almost all courses have been provided as online-sessions (Zoom/Teams). In 2023 many courses could be organised again in person.
- 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 in the Netherlands for Plant Breeders' Rights as well as for Listing for all species using UPOV Prisma .

Number of applications received

In 2023, 2601 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 as PBR, in vegetables and in agricultural crops are split in this table.

2023	NL listing	NL PBR	EU PBR	TOTAL
<i>Agriculture</i>	242	54	24	320
<i>Vegetable</i>	817	596	74	1487
<i>Ornamental (incl. trees)</i>		206	588	794
TOTAL	1059	856	686	2601

DUS projects

Digitisation

- Naktuinbouw continues to work on the expansion of the Naktuinbouw Academy: a digital training platform.
- Databases: Naktuinbouw develops SNP-databases in French bean, Hemp and Tomato. Some databases are developed nationally, others in international projects (e.g. IMODDUS). The projects are funded by amongst others the Dutch board for plant varieties and CPVO.

EU projects: Harmorescoll, INVITE and IPKey and twinning project Ukraine

- Harmorescoll: in this project the reference material for obligatory disease resistance tests will be harmonized. 2024 will be the final year of the project.
- The EU project INVITE on the improvement on DUS and VCU. Naktuinbouw is one of the partners in this program. 2024 is the last year of this project.
- Naktuinbouw continues to support IPKey projects.
- CPVO funds a project to develop a disease resistance test for ToBRFV in tomato and for Aphis gossypii in cucumber.

Other projects

Methodology projects that are funded by the Board for plant varieties in the Netherlands are e.g.

- the SNP-development for some morphological characteristics in tomato,
- development of a SNP set in courgette,
- development of a disease resistance test for CABYV in cucumber,
- protocol verification and future protocol revision for seed shallot varieties,
- bolting in celery and celeriac.

International cooperation 2024

- Since 2022, a holistic project has been started in the Philippines with the funds provided by RVO. The project aims to share knowledge and provide trainings for the development of the Philippines National Seed Technology Park (NSTP) project. The project will continue till July 2024.
- Since 2021, Naktuinbouw has participated in the Collaborative Seed Program in Nigeria. One of the project's goals is to set up a PVP system in the country.
- In 2023, received a delegation from Morocco regarding knowledge exchange for DUS trials of fibre-cannabis.
- Naktuinbouw collaborated with TAEIX on three occasions. We received a delegation from Colombia for a DUS training on Cannabis, a delegation from Serbia for an exchange on conservation varieties, and a visit to Japan for an exchange of knowledge on molecular techniques for infringements of plant breeder rights is under planning.
- In 2024 a project with Suriname will be funded by the Makandra Program.

PVP Development Program (Toolbox)

- This tool helps countries develop, improve, and implement their Plant Breeders' Rights system. In 2023, different PVP projects were carried out in 11 countries, and thirteen projects were granted in 2024: Armenia, Azerbaijan, Dominican Republic, Ghana, Japan, Kazakhstan, Kenya, Morocco, Türkiye and Western Balkans.
- More info: PVP Development Program – PVP Toolbox | Naktuinbouw or contact: PVPToolbox@naktuinbouw.nl

Plant Breeders Rights training course.

- The course was presented online in 2022. In 2023, 14 participants from 8 different countries attended. Participants rated this course 9.6 out of 10.
- In 2024, the training course on Plant Breeders Rights is entirely presented as an e-learning. The study load is around 80 hrs, depending on prior knowledge. Participants can register and start at any time throughout the year.
- More information: <https://www.naktuinbouw.com/knowledge-education/training-courses/plant-breeders-rights-for-food-security-and-economic-development> or contact I.pinan.gonzalez@naktuinbouw.nl

[Annex V follows]

NEW ZEALAND

The New Plant Variety Rights Law 2023 and the new fees regime has now been in operation for over a year. In the year to April 2024 the New Zealand PVR Office received 110 total new applications where 25 were for new varieties of ornamental plants. This represents a decrease in applications for ornamentals plants with respect to the previous year (35). Roses remain the most important genus with approximately 30% of the total applications followed by Lavenders and Tulips. In this past year the number of grants issued for ornamental plants was 36 and there are 87 ornamental varieties currently under test. Foreign test report usage for a New Zealand decision has not changed, typically around 20% of grants are based on foreign DUS testing.

Breeders have raised concerns regarding the incoming changes to the cost of importing and biosecurity. Breeders indicate that the number of imported ornamental varieties may decrease with a corresponding decrease in PVR applications.

The Plant Variety Rights Office recently published on its website updated practice notes regarding Technical Guidance under the New Plant Variety Act 2023. The PVR Economic Innovation and Public Good Study report has been completed and published in the IPONZ PVR website. The study will be used to inform future options for funding of the PVR regime.

[Annex VI follows]

SOUTH AFRICA

The South African PBR Office, residing under the Ministry of Agriculture, Land Reform and Rural Development (DALRRD), is the national authority receiving and examining Plant Breeders' Rights applications, and the granting of Plant Breeders' Rights.

Statistics

With reference to Applications and valid Plant Breeders' Rights for 2023 the following is reported:

- ✓ No additional taxon protected has been declared in terms of the Plant Breeders' Rights Act during 2023.
- ✓ 323 PBR applications were received of which 57% [185] were for Agricultural crops, 9% [28] for Ornamental crops, 25% [82] for Fruit crops and 9% [28] for Vegetable crops.
- ✓ As of December 2023, a TOTAL of 3809 varieties had valid plant breeder's rights in South Africa, of which 20% [804] were for Ornamental crops, 40% [1500] for Agricultural crops, 32% [1205] for Fruit crops and 8% [300] for Vegetable crops. The top three crops for agricultural crops are:

AGRIC CROPS	
1. <i>Zea mays</i> L. [727]	
2. <i>Glycine max.</i> (L.) Merrill. [175 GMO + 14 CONV]	
3. <i>Triticum</i> L. [118]	

White CONV	102
White open pollinated	4
White GMO	232
Yellow CONV	122
Yellow GMO	254
Sweetcorn	13

Applications for Agricultural crops as well as the grants were for the United States of America, Brazil, Argentina and South Africa.

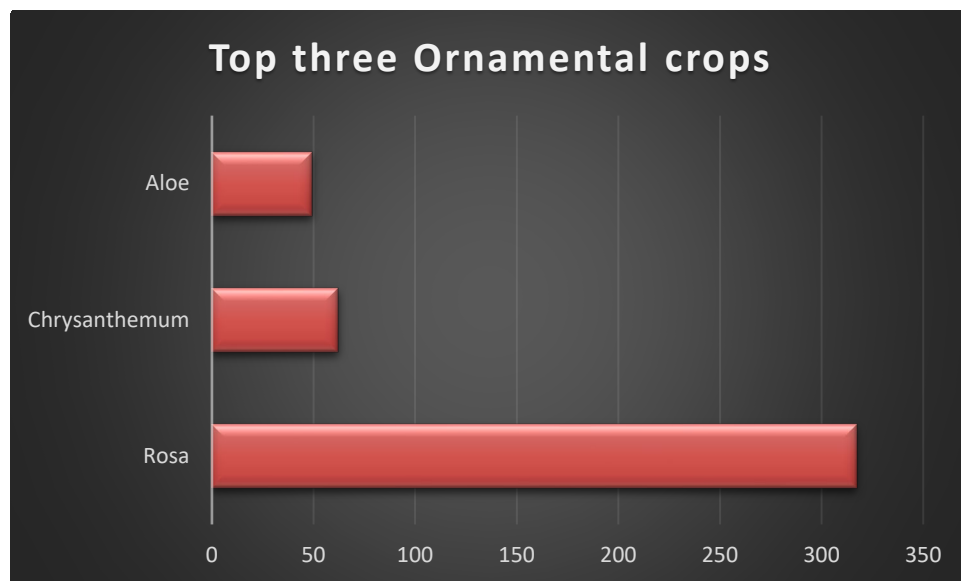
The top three Vegetable crops were:	
1. <i>Solanum lycopersicum</i> L. [69]	
2. <i>Phaseolus vulgaris</i> L. [34]	
3. <i>Ipomoea batatas</i> (L.) Lam. [31]	

TWP PBR STATISTICS FOR ORNAMENTAL CROPS FOR SOUTH AFRICA ENDING 31 DECEMBER 2023

With reference to Applications and valid Plant Breeders' Rights for **2023** the following is reported:

- No additional taxa have been declared in terms of the Plant Breeders' Rights Act during **2023**.
- **323** PBR applications were received of which **9% [28]** were for **Ornamental crops**.
- As of December **2023**, a **TOTAL** of **3809** varieties had valid plant breeder's rights in South Africa, of which **20% [804]** were for **Ornamental crops**.

The top three Ornamental crops are:
1. <i>Rosa</i> L. [317]
2. <i>Chrysanthemum</i> L. [62]
3. <i>Aloe</i> L. [49]



[Annex VII follows]

UNITED KINGDOM

The Plant Variety Rights Office for the United Kingdom is part of the Animal and Plant Health Agency (APHA), an executive agency of the Department for Environment, Food and Rural Affairs (Defra) and its remit is to coordinate the delivery of variety registration and Plant Breeders Rights (PBR) in the United Kingdom. Contact details are available on the Gov.UK website: [UK Variety Listing and PBR](#).

In 2023 the United Kingdom received 1248 applications covering Plant Breeders Rights and National Listing. The applications were made up of 581 vegetables, 532 agricultural, 94 ornamentals, and 41 fruit. Of these, 443 tests were not conducted in the United Kingdom, but carried out by UPOV members.

The United Kingdom continues to process all applications for PBR or National Listing through UPOV PRISMA. The system was quickly accepted by applicants and is now considered the norm.

DUS testing in the United Kingdom is conducted at NIAB ([www.niab.com](#)), AFBI ([www.afbini.gov.uk](#)), and SASA ([www.sasa.gov.uk](#)). NIAB carry out the testing of wheat (winter and spring), Barley (winter and spring), Oats (winter and spring), Oilseed Rape (winter), Sugar Beet, Field Beans (winter and spring), Fodder Kale, and ornamental plants which include Chrysanthemum, Rose and a range of species of shrubs and herbaceous perennials. AFBI perform DUS testing of perennial ryegrass, Italian ryegrass, hybrid ryegrass and white clover. SASA conduct the DUS testing for potatoes, field pea, swede, turnip rape and vegetable peas.

The United Kingdom authorities are working together to develop a United Kingdom Plant Variety and Seeds (PVS) Strategy spanning Plant Variety Rights, plant variety registration, and setting standards for marketing and certification of seed and other plant propagating material. This will be the first PVS strategy building in the United Kingdom in recent times and its development is an opportunity to engage with industry and other stakeholders to set out a shared vision, priorities, and actions to achieve these.

The strategy will aim:

- to enable a thriving and dynamic plant breeding sector capable of meeting the challenges and opportunities of a changing world,
- to uphold proportionate quality and marketing standards for seed and other propagating material to ensure a well-functioning internal market,
- to maintain and enhance the United Kingdom's global reputation in plant breeding and marketing standards.

The United Kingdom continues to support the UPOV distance learning courses by providing tutors. Technical and administrative staff at our test centres take advantage of the distance learning opportunities through DL205 and DL305.

Colleagues across the United Kingdom have also benefitted from attending the two recent UPOV seminars and the UPOV Technical Working Parties Preparatory Webinars. The United Kingdom were represented on both panel sessions: Alex Talibudeen on the Image analysis in DUS examination and Hilary Papworth on the Developing individual Test Guidelines in the absence of UPOV Test Guidelines.

NIAB's Hilary Papworth is the new Chair of the UPOV Technical Working Party for Ornamental Plants and Forest Trees (TWO). Margaret Wallace is co-ordinating a sub-group of the Technical Committee focussing on issues relating to Test Guidelines and the web-based TG-Template.

To meet the challenges of climate change, the rapid development of new plant varieties for our farmers and growers should be encouraged and facilitated. The United Kingdom are actively driving the implementation of new techniques to DUS testing through several collaborative or internal projects:

- AFBI are coordinators of the 4.5-year Horizon 2020 (SFS-29-2018) InnoVar project ([www.h2020innovar.eu](#)). InnoVar aims to augment and improve the efficacy and accuracy of European crop variety testing and decision-making, using an integrated approach incorporating genomics, phenomics and machine learning. Data from our European-wide trial series will form the basis of a new, purpose built, variety recommendation tools. The project focuses on bread and durum wheat initially before applying the InnoVar approach to other crops. The project's consortium includes 21 partners across Europe, including United Kingdom partners ADAS, AHDB and APHA.

- NIAB, SASA and BioSS (Biomathematics and Statistics Scotland) are active partners in the 5-year H2020 INVITE (Innovations in plant Variety Testing in Europe – www.h2020-invite.eu). INVITE aims to improve both efficiency of variety testing and the information available to stakeholders on variety performance under a range of production conditions and biotic and abiotic stresses. This will be exemplified on ten selected species (apple, fodder grass, sunflower, soybean, wheat, maize, potato, tomato, oilseed rape, and lucerne) representing the main features of propagation, food and feed uses, and having an important breeding activity at EU level. There are 28 partners across Europe involved. Within this project, new approaches to assessing genetic uniformity ([TWM/2/5](#)) and to reference collection management using molecular markers based on genomic prediction ([TWM/2/4](#)) have been developed by BioSS.
- There is collaboration between InnoVar and INVITE, which will both conclude in 2024. There is also liaison between INVITE and the Australian INVITA project.
- Two projects have been funded by Defra developing molecular methods in DUS work ([TWM/2/6](#)). The first is the use of marker information to inform the selection of similar varieties to be included in a barley (*Hordeum vulgare*) test program. The second, is developing a machine learning program to identify genomic markers with the potential to distinguish between varieties of raspberry (*Rubus idaeus* L.). Both projects are in their infancy and will complete in January 2025.
- The United Kingdom continues to work on the development of the new version of COYU, for assessing uniformity ([TWM/2/3](#)). There have been two workshops to progress the development of guidance. Associated with this, a new improved version of the widely used software DUST9NT has been produced by BioSS and AFBI.
- NIAB has continued their investigation into the use of UAV (Unmanned Aerial Vehicles) within a DUS testing situation ([TWM/2/8](#)).

[End of Annex VII and of document]