

Technical Working Party for Agricultural Crops
TWA/54/2
Fifty-Fourth Session
Arusha, United Republic of Tanzania, May 19 to 22, 2025
Original: English

Date: September 11, 2025

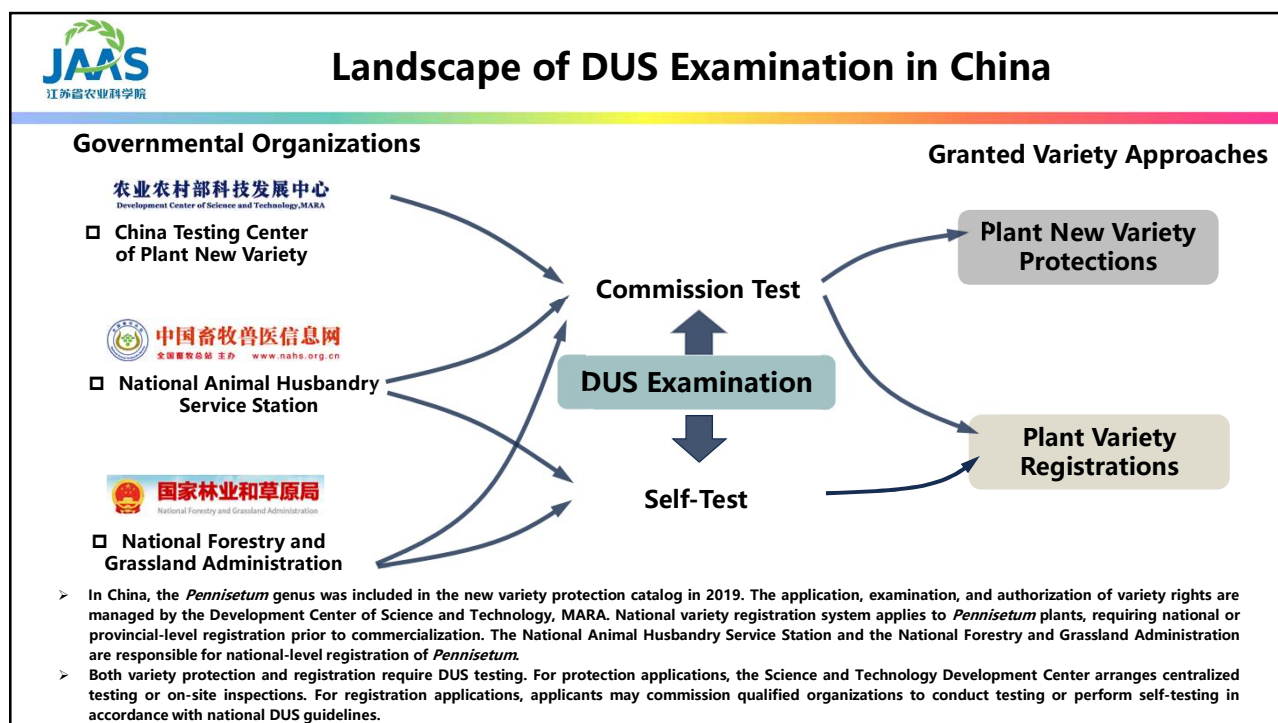
REPORTS ON DEVELOPMENTS IN PLANT VARIETY PROTECTION FROM MEMBERS AND OBSERVERS
Document prepared by the Office of the Union
Disclaimer: this document does not represent UPOV policies or guidance

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-25/008 of February 19, 2025. The following reports were received (in alphabetical order):

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

[Annexes follow]



1

JAAS
江苏省农业科学院

Data Summary of DUS Examination, Granted Variety and Foreign Applications of Elephant Grass in China

Organization	DUS Examination		Under Process		Granted Variety		Foreign Applications in China	
	Commission Test	Self-Test	New Variety Protections	Variety Registrations	New Variety Protections	Variety Registrations	New Variety Protections	Variety Registrations
China Testing Center of Plant New Variety	38	/	11	/	2	/	/	/
National Animal Husbandry Service Station	/	12	/	6	/	9	/	3
National Forestry and Grassland Administration	/	2	/	/	/	2	/	/
Total	52		17		13		3	

➤ We compiled and analyzed datasets from three departments to quantify metrics including DUS examination, plant variety protection applications/grants, and foreign variety applications.

2



Geographic Origins of Foreign Elephant Grass Registered in China

NO	Variety Name	Origins	Registration Date	Registration Number
1	Huanan	Indonesia	1990.05.25	066
2	Mott	U. S. A	1994.03.26	134
3	Reyan NO.4	Colombia	1998.11.30	196

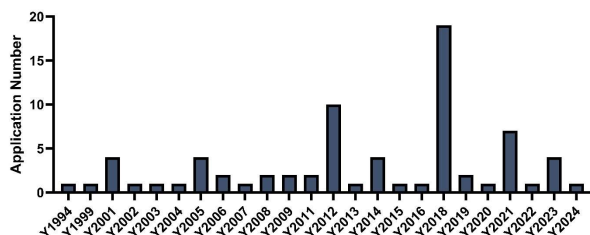
- China permits foreign elephant grass varieties to undergo introduced variety registration in China in accordance with established procedures.

3

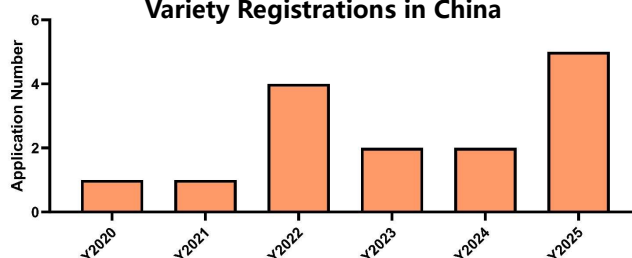


Current Breeding Activity of Elephant Grass in China

Trend in Revisitation Number in CPVO



Trend in Application Number for Variety Registrations in China



- Our analysis of CPVO variety registration data (78 varieties in total, 1994-2024) revealed a peak of application number in 2018.
- Despite China's inclusion of *Pennisetum* in its protected plant list in 2019, comparative analysis reveals a marked surge in variety registrations applications, indicating intensified breeding activities for this genus.

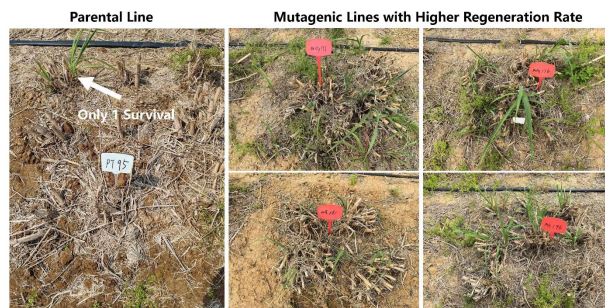
4



Current Breeding Efforts on Elephant Grass in China



Elephant Grass



- As a perennial grass, elephant grass exhibits natural overwintering regeneration capability only south of 28°N latitude.
- Through mutagenesis coupled with selective breeding, we developed novel germplasm lines achieving >80% overwinter survival rates, thereby expanding viable planting zones.

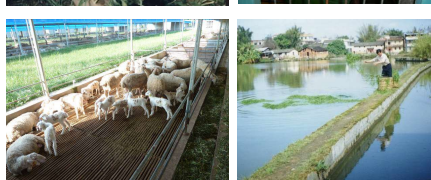
5



Economic Importance of Elephant Grass in China



Feed for Livestock and Aquaculture Species




Industrialization of Feed Processing Systems




- In recent years, China has witnessed accelerated innovation and utilization of elephant grass, with the varieties and its hybrids cultivated over 70,000-100,000 hectares (19-23% of the world area) and achieving yields exceeding 180 kg/ha.
- Its broad-spectrum stress tolerance and phenotypic plasticity enable robust growth in coastal saline-alkali soil and nutrient-depleted montane ecosystems.
- Hence, it is emphasized as the one of the best species for forage grass in China. At 2023, China commands 12-15% share in global elephant grass hay trade.


6




**Worldwide Agricultural Utilization of Elephant Grass
Driven by the Chinese Government**



Planting Workshop on Elephant Grass for Pacific Island Nations




Elephant Grass Forage in Fiji



Elephant Grass Growth in Mauritania, Africa

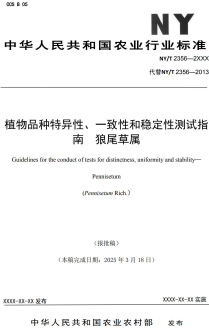
- With China's support, elephant grass has been introduced to 106 countries globally, primarily addressing forage and livestock challenges in African and Pacific Island nations.
- Elephant grass extension program has been designated by the United Nations as a Flagship Project under the China-UN Peace and Development Fund for Global Dissemination.

7




**Our Expertise in Elephant Grass
Germplasm Innovation and Its Breeding Science**


Completed Revision of the National DUS Test Guidelines in *Pennisetum*



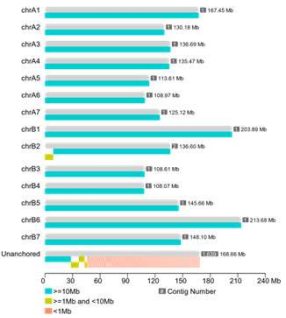
Granted 5 *Pennisetum* varieties



Sustaining Large Scale of Self-Pollinated Seed Populations in Elephant grass



High Quality of Elephant grass Genome Assembly and Further Pan-genome



- We spearheaded and finalized the revision of China's DUS Test Guidelines (NY/T 2356-2025).
- We have achieved national registration for 5 *Pennisetum* varieties, occupying 50% of the national registrations in this genus.
- We managed to achieve the large-scale self-pollinated seed populations in elephant grass, inheriting larger genetic diversity.
- We accomplished the high-quality elephant grass genome assembly, preparing to pan-genome analysis on this plant.

8

EUROPEAN UNION

CPVO STATISTICS AND ACTIVITIES

Statistics

The Community Plant Variety Office of the European Union (CPVO) applications increased in 2024, with 3268 applications in total (previous year: 2866, +14%). The distribution between crop sectors was as follows:

- **Agricultural, 1132 applications (34.64%), previous year (841 applications, 29.5%),**
- Ornamental, 1130 applications (34.58%), previous year (1088 applications, 38%),
- Vegetable, 748 applications (22.89%), previous year (670 applications, 23%),
- Fruit, 258 applications (7.89%), previous year (267 applications, 9.5%).

The increase in the number of applications was in the agricultural sector (+34.60%), in the ornamental sector (+3.86%) and in the vegetable sector (+11.64%) is contrasted by a slight decrease in application in the fruit sector last year (-9 applications; -3.37%).

In 2024, the CPVO Office granted 2 605 titles for Community protection; 31 317 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 2024, the CPVO provided 588 technical reports to 34 countries (550 in 2022 and 1266 in 2023), among which 8 in the agricultural sector. The five countries from which most requests emanated were United Kingdom, Colombia, Canada, Kenya, and Brazil. More statistics are available on the CPVO website: [Statistics | CPVO \(europa.eu\)](https://cpvo.europa.eu/en/cpvo-policy-status-plant-material-used-dus-testing-purposes)

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 2024, the members of the AC adopted the following:

- AC agreement for cooperation with China (MARA) to organize DUS examination or take-over of DUS reports of several species of Mushrooms (*Flammulina velutipes* (Fr.) Sing, *Hypsizygus marmoreus* (Peck) Bigelow, *Lentinula edodes* (Berk.) Pegler, *Morchella* Dill. ex. Pers.
- Agreement on reviewed of the CPVO Policy on Plant material submitted for DUS testing: clarification that “Material” also covers DNA; clarification on the use of material for R&D purpose <https://cpvo.europa.eu/en/cpvo-policy-status-plant-material-used-dus-testing-purposes>.
- In the course of 2024, the following technical protocols were adopted by the AC, based on the UPOV TGs.

Common millet	<i>Panicum miliaceum</i> L.	CPVO-TP/248/1
Cauliflower	<i>Brassica oleracea</i> L. convar. <i>botrytis</i> (L.) Alef. var. <i>botrytis</i> L.	CPVO-TP/045/2-Rev.3
Red cabbage, white cabbage, savoy cabbage	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.	CPVO-TP/048/3-Rev.3
Brussels sprout	<i>Brassica oleracea</i> L. var. <i>gemmifera</i> Zenker	CPVO-TP/054/2-Rev.2
Kohlrabi	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L. (<i>Brassica oleracea</i> Kohlrabi Group)	CPVO-TP/151/2-Rev.3
Broccoli	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck	CPVO-TP/068/1
Lettuce	<i>Lactuca sativa</i> L.	CPVO-TP/013/6-Rev4
Radish, black radish,	<i>Raphanus sativus</i> L. var. <i>sativus</i> ; <i>Raphanus sativus</i> L. var. <i>niger</i> (Miller) S. Kerner	CPVO-TP/064/2-Rev.2
Corn salad	<i>Valerianella locusta</i> L.; <i>Valerianella eriocarpa</i> Desv.	CPVO-TP/075/2-Rev

Watermelon	<i>Citrullus lanatus</i> (Thunb.) Matsum et Nakai	CPVO-TP/142/2-Rev.3
Tomato rootstocks	<i>Solanum habrochaites</i> S. Knapp & D.M. Spooner; <i>Solanum lycopersicum</i> L. x <i>Solanum habrochaites</i> S. Knapp & D.M. Spooner; <i>Solanum lycopersicum</i> L. x <i>Solanum peruvianum</i> (L.) Mill.; <i>Solanum pimpinellifolium</i> L. x <i>Solanum habrochaites</i> S. Knapp & D.M. Spooner	CPVO/TP-294/1-Rev.6

R&D projects

The Office co-finances a number of R&D projects; 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>

AGRICULTURAL SECTOR

Statistics

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

Species	2020	2021	2022	2023	2024	Total (1995-2024)
<i>Zea mays</i> L.	173	325	217	245	276	6 246
<i>Triticum aestivum</i> L. emend. Fiori & Paol.	137	128	147	115	208	2 934
<i>Brassica napus</i> L. emend. Metzg.	149	92	110	64	73	2 168
<i>Solanum tuberosum</i> L.	72	72	59	59	65	2 060
<i>Hordeum vulgare</i> L.	75	56	83	62	93	1 835
<i>Helianthus annuus</i> L.	55	135	68	60	165	1 592
<i>Lolium perenne</i> L.	19	20	30	21	6	500
<i>Glycine max</i> (L.) Merrill	61	32	71	56	46	472
<i>Triticum turgidum</i> L. subsp. <i>durum</i> (Desf.) Husn.	25	25	16	12	26	460
<i>Cannabis sativa</i> L.	89	104	50	22	9	425
Total	855	989	851	716	967	

The agricultural expert meeting (AEM)

The CPVO held its annual meeting with EU agricultural experts on 9-10 October 2024 by electronic means. The meeting was attended by experts from nineteen examinations offices as well as by representatives of the breeder's organisations and European Commission. The group discussed several DUS technical examination related topics - technical protocols (see list above), such as:

- Testing of wheat hybrids: the situation will continue to be monitored, accumulating more experience before deciding whether the uniformity threshold can be modified.
- Spring Barley: problems with distinctness observation, - the discussion to be followed at UPOV level. A ring test is planned during the 2025 growing cycle, involving eleven examination offices. They will observe three additional characteristics: Leaf: Width, Awn: Length of the smooth part of the median nerve and Grain: Spiculation of the outer lateral nerves on the dorsal side of the lemma. The results of the observation will be reported at AEM25. In 2026 a technical workshop is planned to take a place at the premises of GEVES.

- Characteristics with one single observation in varieties examined for more than one growing cycles: Working Group to work on the subject created, a new document discussed at the Annual Meeting with Examination Offices in 2024. The procedure to be presented at TWA/54.
- Collect and monitor stocks of seeds for reference collection: the subject matter will be dealt with in the strategic discussions
- UPOV codes, EU Plant Variety Portal, CPVO database: impact of the modification of species names and their grouping information on various databases
- Difficulties in DUS testing of grasses: the exchange of experience on the subject matter will continue

The following Technical Protocols were discussed by the group: rice, sunflower, oil seed rape, turnip rape, soya bean and red clover.

[Annex III follows]

JAPAN

1. Number of applications in 2024

Year	Total number	(2024/2023)	Agricultural crops	(2024/2023)
1978 to 2024	37805	-	2831	-
2023	591		65	
2024	599	(101%)	65	(100%)

Top 5 of application for Agricultural crops in 2024

Rice 24, Potato 10, Sweet Potato 6, Wheat 4, Soya bean 3, Total: 47

2. Number of granted in 2024

Year	Total number	(2024/2023)	Agricultural crops	(2024/2023)
1978 to 2024	30538	-	2425	-
2023	497		49	
2024	703	(141%)	62	(127%)

Top 5 of application for Agricultural crops in 2024

Rice 24, Maize 5, Sorghum 5, Wheat 4, Tea 4, Total: 42

3. National test guidelines harmonized with UPOV TGs in 2024.

Common name of plants (4)
Beetroot, Bottle Gourd, Pea, Zinnia

4. National test guidelines developed for new type of species in 2024.

Genera or Species (5)
<i>Anemone coronaria</i> L., <i>Arthropodium candidum</i> Raoul, <i>Cleyera japonica</i> Thunb., <i>Ficus benghalensis</i> L., <i>Lachenalia</i> Jacq. f. ex Murr.

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 51 DUS examination reports in total to other countries in 2024. MAFF and Dirección Técnica de Semillas, Instituto Colombiano Agropecuario (ICA) had signed MOC for cooperation in DUS examination in 2024. We have also signed the MOC with the Plant Variety Rights Office for the United Kingdom this February.
- ✓ Since 2016, based on the Memorandum of Understanding (MOU), Center for Seeds and Seedlings, NARO (NCSS) and Naktuinbouw have established Calibration Manuals for DUS technical harmonization. "Calibration manual for Celosia" was finalized in 2025, and it will be published through both of websites. With addition of this, a total of 12 Calibration Manuals will be available for third country.
- ✓ In addition, a three-year extension of the MOU between Naktuinbouw and NCSS, which expired in March 2024, was concluded up to March 2027 in order to contribute international harmonization in cooperation with Naktuinbouw. In extending the MOU, it was newly agreed to provide technical cooperation on DNA analysis for disease resistance in DUS test, DNA variety identification techniques for plant variety protection.

[Annex IV follows]

NETHERLANDS (KINGDOM OF THE)

Naktuinbouw Variety Testing developments

- The Unit Variety Testing includes a DUS team of 40 employees, one unit manager, and 4 employees specialized in disease resistance. Also a support team, a trial management team with 2 cultivation managers and a project team. In total there are 70 employees and supplemented with temporary (circa 18) staff in summer. The unit works together with the teams of the unit Identity and Quality (laboratories) especially with Molecular Marker team and team Bioinformatics.
- In 2024 facilities for resistance testing have been expanded and a new drying and storage room has been built for onions.
- The Variety Testing Unit yearly offers a number of courses on Plant Breeders' Rights and/or Listing. In 2025 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 (Kingdom of) for Plant Breeders' Rights as well as for Listing for all species using UPOV PRISMA.

Number of applications received

In 2024, 2514 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.

2024	NL listing	NL PBR	EU PBR	TOTAL
Agriculture	247	54	13	320
Vegetable	757	622	72	1487
Ornamental (incl. trees)		124	625	794
TOTAL	1004	800	710	2514

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, Tomato and Lettuce. 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.

Projects

- Harmorescoll: in this project the reference material for obligatory disease resistance tests is harmonized. We expect that this work will be continues in 2025 and further.
- The EU project INVITE on the improvement on DUS and VCU. Naktuinbouw is one of the partners in this program. 2024 was the last year of this project. Naktuinbouw will continue with follow up project to get usable tools for Analysis with drones in Ryegrass, to use an app for some characteristics in tomato and to continue the work on common databases.
- Naktuinbouw continues to support IP Key projects.
- CPVO funds a project to develop a disease resistance test for ToBRFV in tomato and for Aphis gossypii in cucumber. Another project is to develop SNP marker set for lettuce together with Germany, Spain and France.

Other projects

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

- Marker development for fusarium (FOC1) resistance in brassica,
- Verification research on DNA combined with morphology in tomato and onion,
- Selecting similar varieties with image analysis and AI.

International cooperation 2025

- 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 2024 a project with Suriname has been started by the Makandra Program.
- We are participating in Advisory Committee for India – Bangladesh – Netherlands Seed Partnership. These two partnerships are initiative of SeedNL. Under India-Netherlands Seed Partnership, a delegation will visit Naktuinbouw in May. The focus of the visit is PBR and Inspections in the Netherlands. The visit is still being planned so dates are not final yet.
- Together with CPVO a visit to Netherlands (Kingdom of the) for the Bosnia and Herzegovina will be started (funded by TAIEX).

PVP Development Program (Toolbox)

- This tool helps countries develop, improve, and implement their Plant Breeders' Rights system. In 2024, different PVP projects were carried out in 11 countries and 12 projects were granted in 2025: Argentina, Armenia, Egypt, Ghana, Guatemala, Kazakhstan, Nigeria, Peru, PVP Toolbox Evaluation 2021-24, UPOV PRISMA support and Viet Nam.
- More info: PVP Development Program – PVP Toolbox | Naktuinbouw or contact: PVPToolbox@naktuinbouw.nl

Plant Breeders Rights training course.

- In Jan-March 2025, the training course on Plant Breeders Rights has been presented as an e-course with weekly online plenary sessions where the contents were discussed. This edition was attended by 9 students from Nigeria, Surinam and the Netherlands (Kingdom of the).
- In the remainder of 2025 and onwards, the course can be followed as an e-learning with tutoring per e-mail. Participants can register and start at any time throughout the year. The study load is around 80-100 hours, depending on prior knowledge.
- A hybrid version of this course (e-learning + 1 week practical training in the Netherlands (Kingdom of the)) may be organized in spring 2026, provided there is sufficient interest.
- More information: <https://www.naktuinbouw.com/knowledge-education/training-courses/plant-breeders-rights-for-food-security-and-economic-development> or contact l.pinan.gonzalez@naktuinbouw.nl

[Annex V follows]

NEW ZEALAND

PVR applications for agricultural varieties in 2023/2024 have increased from the previous years by 50% with thirty-eight (38) applications. This comprises fourteen (14) pasture varieties, three (3) fungal endophytes and twenty-one (21) agricultural crop varieties. Agricultural crop varieties include six (6) fodder brassicas, six (6) wheat, three (3) hop, two (2) barley, two (2) quinoa and one (1) each of oat and triticale. There is currently a total of sixty-six (66) varieties under examination.

The increase in overall application numbers is mainly due to the increase in fodder brassica and cereal varieties. The introduction of an industry managed, voluntary, royalty payment scheme for farm saved seed may have contributed to the rise and further increases in agricultural variety applications may occur. One of the industry requirements for participation in the royalty collection scheme is that the variety is protected. The interest in protecting varieties for turf and amenity continues with a number of turf grass varieties under application with browntop (Bent) (*Agrostis capillaris*) and chewing fescue (*Festuca rubra*) incorporated into the usual ryegrass (*Lolium*) turf types.

New Zealand visited the National Institute of Agricultural Botany (NIAB) in Cambridge, United Kingdom, in July 2024 to observe the agricultural trials held there. The visit was a very informative and examination methods in DUS trials were discussed, especially related to visual observations.

New Zealand hosted Examiners from the Korea Seed and Variety Service, Republic of Korea in Christchurch for a week in December 2024. The visit was centred around breeder involvement in DUS testing and more broadly, breeder interactions with the examination system in New Zealand. The visit included round table discussions and field trips to the agricultural, fruit and ornamental DUS trial sites near Christchurch. This was a very beneficial visit for both sides with mutual sharing of experience and knowledge.

PVR IPONZ, IP Australia and the UPOV Secretariat jointly presented a webinar in February 2025 on the use of UPOV PRISMA, the online plant variety protection application tool, for Australasia. Information regarding the connection of UPOV PRISMA to the Australian and to the New Zealand national schemes was provided and key elements for easy UPOV PRISMA use in each jurisdiction were highlighted.

The Plant Variety Rights Act 2022 includes provisions for the establishment of a Māori Plant Varieties Committee (MPVC), whose main role is to assess whether a Plant Variety Right (PVR) may have adverse effects on associated kaitiaki (guardianship) relationships with indigenous plant species. The Committee has now been established and the first meeting has been held. Indigenous plant species comprise all New Zealand native genera and species. Use of native plants is mostly for ornamental purposes with some limited breeding using a small number of native grass species.

[Annex VI follows]

SOUTH AFRICA

The South African PBR Office, residing under the Ministry of Agriculture [DoA], 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 2024 the following is reported:

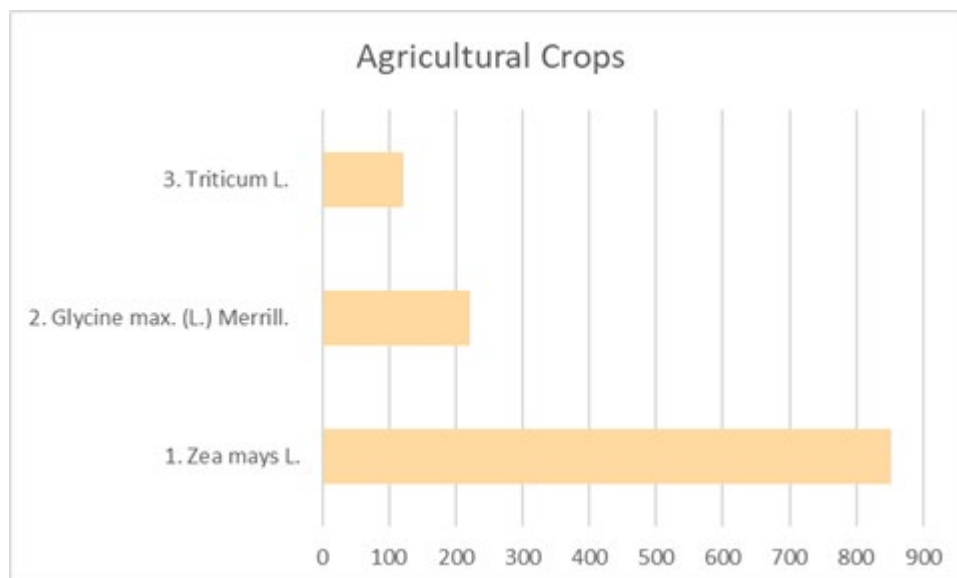
- No additional taxa have been declared in terms of the Plant Breeders' Rights Act during 2024.
- Total of 237 new PBR applications were received of which 50% [118] were for Agricultural crops.
- As of December 2024, a TOTAL of 3985 varieties had valid plant breeder's rights in South Africa, of which 41% [1644] were for Agricultural crops.

The top three Agricultural crops were:	
1. <i>Zea mays</i> L.	836
2. <i>Glycine max.</i> (L.) Merrill.	221
3. <i>Triticum</i> L.	121

1. <i>Zea mays</i> L.	[836]
White CONV	101
White open pollinated	03
White GMO	260
Yellow CONV	163
Yellow GMO	309
Total	836

2. <i>Glycine max.</i> (L.) Merrill	[221]
GMO	202
CONV	19
Total	202

3. <i>Triticum</i> L.	[121]
Total	121



[Annex VII follows]

UNIED KINGDOM

Report on the activity of the Plant Varieties Rights Office for the United Kingdom (UK) and the DUS examination centres of Niab, SASA and AFBI.

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 listing and Plant Breeders Rights (PBR) in the United Kingdom. Contact details are available on the Gov.UK website: [UK Variety Listing and PBR](#).

In 2024 the United Kingdom received 1123 applications covering PBR and variety listing. The applications were made up of 443 vegetables, 516 agricultural, 107 ornamentals, and 57 fruit. Of these, 663 tests were not conducted in the United Kingdom, but carried out by UPOV members.

The United Kingdom will be implementing a customised version of the UPOV e-PVP administration module and DUS exchange module in 2025. This will further complement the use of UPOV PRISMA as the compulsory application pathway for PBR and variety listing in the United Kingdom.

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 PBR, plant variety listing, and setting standards for marketing and certification of seed and other plant propagating material, anticipated to launch in early 2026. This will be the first United Kingdom PVS strategy, 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.

England is continuing work to implement the Genetic Technology (Precision Breeding) Act 2023 through the introduction of secondary legislation and consultation with industry. Furthermore, the DUS test centres are working with policy officials to ensure England has the capability to undertake DUS and VCU testing of precision bred plant varieties. The Act removes precision bred plants from regulatory requirements applicable to Genetically Modified Organisms in England.

The United Kingdom and Japan signed a Memorandum of Cooperation on the examination of plant varieties for the purpose of PBR. The MoC covers the exchange of examination reports for the granting of PBR and formalises current working practices between the United Kingdom and Japan, and came into operation on the 14th February 2025.

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 technical webinars. Hilary Papworth (Niab) presented in the first webinar on the subject of developing National Test Guidelines in the absence of a UPOV Test Guideline.

Hilary Papworth continues in her role as the Chair of the UPOV Technical Working Party for Ornamental Plants and Forest Trees (TWO). As does Margaret Wallace (Niab) in her role 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 is actively driving the implementation of new techniques to DUS testing through several collaborative or internal projects:

- The United Kingdom has been active partners in the European-funded [INVITE](#) (Niab, SASA and BioSS (Biomathematics and Statistics Scotland)) project, which finished in December 2024. As part of this,

innovations have been produced in how genetic markers might be used in DUS. In particular, at the TWM, there will be a presentation on a new method for trial management using genomic prediction, demonstrated on wheat. There will also be a presentation on an enhanced version of COYD for distinctness assessment in cross-pollinated crops. This embeds information on genetic similarity of varieties into the COYD analysis, giving more precise estimates of variety means. Finally, the method for assessing uniformity in cross-pollinated crops with genetic markers, which was presented at the TWM last year, was presented at the OECD Seed Schemes TWG in January 2025 as an approach for varietal purity.

- The Agri-Food and Biosciences (AFBI) in Northern Ireland are coordinators of the 5-year Horizon 2020 (SFS-29-2018) [InnoVar](#) project. 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. Key achievements include:

- Development of tools that demonstrate ways to improve the efficiency of plant testing practices utilising phenomics, genomics and machine learning.
- Demonstration of a template for harmonised VCU protocols across Europe and beyond.
- Provide a template for introducing measures of sustainability and resilience into performance testing.
- Provided a roadmap for transferring the InnoVar approach in wheat to other major crops, including perennial ryegrass.
- Developed the concept of High-Performance Low Risk (HPLRTM) categorisation of plant varieties.

- A revised version of DUST is nearly ready for release. This version includes an improved installation process and the new COYU with splines module. The software has been tested by the United Kingdom, the Netherlands (Kingdom of) and Finland. This was mainly successful but revealed that the Excel conversion function does not work outside of the United Kingdom. We are working to resolve this.

- The United Kingdom is starting the introduction of the new COYU with splines method. As part of this, guidance is being developed for dealing with extrapolation.

- Two projects, which have finished in March 2025, have been funded by Defra to explore the use of molecular approaches in DUS work. The first project on barley (*Hordeum vulgare*), has provided proof of concept for the use of molecular markers to predict DUS phenotypes, and to inform selection of similar varieties for the growing trials. A smaller marker set has also been identified and validated for seed stock authentications and varietal identification in barley.

In the second project on raspberry (*Rubus idaeus* L.), phenotypic and genotypic datasets were generated for a collection of over 100 red raspberry varieties to begin exploring the prediction of DUS phenotypes via machine learning approaches. The machine learning models developed showed promise in their ability to predict qualitative DUS characteristics, with further investigation required to validate the predictions on larger datasets, and to explore how the approach would be implemented in practice.

- NIAB has continued their investigation into the use of UAV (Unmanned Aerial Vehicles) within a DUS testing situation

Test Guidelines for Barley: TG/19/11
Additional Characteristic(s)

Submitting Authority:	<div>United Kingdom</div>	Contact Expert:	Name:	<div>Vanessa McMillan</div>
Date:	<div>13 May 2025</div>	Organization:	<div>Niab</div>	
		Tel.:	<div>+44 1223 342200</div>	
		E-mail:	<div>vanessa.mcmillan@niab.com</div>	

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	^[iii] Note/ Nota
	VG	Production of pollen (male sterility)					
QL		absent	absente	fehlend	ausente	FM 99-18	1
		present	présente	vorhanden	presente	MT 99-18	9

- ^[i] indicate type of expression (QL, PQ, QN)
^[ii] indicate method of observation (VG, VS, MG, MS)
^[iii] example varieties to be provided for at least 2 states.

Explanation / Illustration (including extent of the use of the characteristic(s)): This characteristic is used to distinguish between male sterile parental lines of hybrids (production of pollen: absent) and their fertile maintainer lines (production of pollen: present). It is a very clear characteristic that is simple to observe.

It is unnecessary to have this included in the Test Guidelines as it is effective to distinguish a relatively small number of varieties.

This additional characteristic has been included in the United Kingdom National Test Protocol for over 10 years. It is not often used for decisions but has proven useful in specific cases.

Test Guidelines for Barley: TG/19/11
Additional Characteristic(s)

Submitting Authority:	<div>United Kingdom</div>	Contact Expert:	Name:	<div>Vanessa McMillan</div>
Date:	<div>13 May 2025</div>	Organization:	<div>Niab</div>	
		Tel.:	<div>+44 1223 342200</div>	
		E-mail:	<div>vanessa.mcmillan@niab.com</div>	

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	[iii] Note/ Nota
	VG	Seed: Glycosidic nitrile production					
QL		absent	absente	fehlend	ausente	Laureate	1
		present	présente	vorhanden	presente	RGT Planet	9

- [i] indicate type of expression (QL, PQ, QN)
 [ii] indicate method of observation (VG, VS, MG, MS)
 [iii] example varieties to be provided for at least 2 states.

Explanation / Illustration (including extent of the use of the characteristic(s)):

Glycosidic nitrile production can be observed via a biochemical assay or DNA marker test. The molecular marker KASP™ assay is currently available from the James Hutton Limited Molecular Diagnostics Unit.

The biochemical assay used to determine GN production is a measurable cyanide assay following the published method: "Institute of Brewing Method 2.21 (Glycosidic Nitrile in Ale, Lager and Distilling Malts using a 5g sample of malt)".

This characteristic was introduced to the United Kingdom National Test Protocol in 2025 and has not yet been used in decisions related to the granting of Plant Breeder's Rights.

Test Guidelines for Barley: TG/19/11
Additional Characteristic(s)

Submitting Authority:	<div>United Kingdom</div>	Contact Expert:	Name:	<div>Vanessa McMillan</div>
Date:	<div>13 May 2025</div>	Organization:	<div>Niab</div>	
		Tel.:	<div>+44 1223 342200</div>	
		E-mail:	<div>vanessa.mcmillan@niab.com</div>	

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	[iii] Note/ Nota
	VG	Seed: Proanthocyanidin content					
QL		absent	absente	fehlend	ausente	Husky	1
		present	présente	vorhanden	presente	Origin	9

- [i] indicate type of expression (QL, PQ, QN)
[ii] indicate method of observation (VG, VS, MG, MS)
[iii] example varieties to be provided for at least 2 states.

Explanation / Illustration (including extent of the use of the characteristic(s)):

A vanillin-HCl staining method is used to observe the characteristic on barley grains. The analysis is done on a sample of 20 grains, which can be extended to 100 grains if any off-types are observed. When state of expression “absent” is observed there is no colouration of the seed coat with the stain. When state of expression “present” is observed the seed coat is stained pink.

This characteristic was introduced to the United Kingdom National Test Protocol in 2024 and has not yet been used in decisions related to the granting of Plant Breeder’s Rights.

Test Guidelines for Oilseed Rape: TG/36/7
Additional Characteristic(s)

Submitting Authority:	<div>United Kingdom</div>	Contact Expert:	Name:	<div>Alex Talibudeen</div>
Date:	<div>13 May 2025</div>	Organization:	<div>Niab</div>	
		Tel.:	<div>+44 1223 342200</div>	
		E-mail:	<div>Alex.Talibudeen@niab.com</div>	

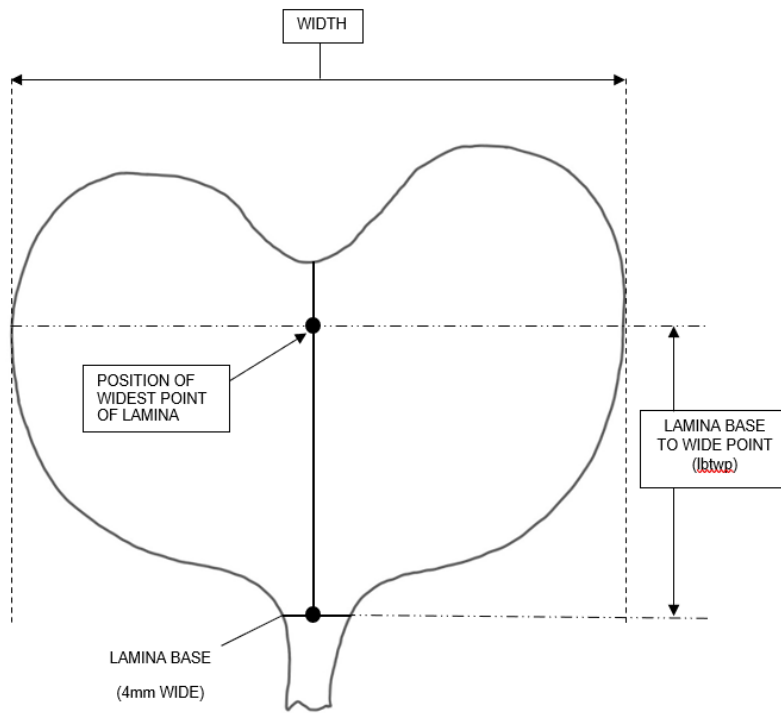
		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo ^[iii]	Note/ Nota
New 1.	MS	Cotyledon: lamina base to wide point (lbtwp)					
	QN	short	court	kurz	corto	Hattrick	3
		medium	moyen	mittel	medio	DK Exmoji	5
		long	long	lang	largo	DK Excited	7
New 2.	MS	Cotyledon: lbtwp/width ratio					
	QN	low	bas	klein	baja	ES Mambo	3
		medium	moyen	mittel	media	DK Exmoji	5
		high	élevé	groß	alta	Simona	7

- [i] indicate type of expression (QL, PQ, QN)
 [ii] indicate method of observation (VG, VS, MG, MS)
 [iii] example varieties to be provided for at least 2 states.

Explanation / Illustration (including extent of the use of the characteristic(s)):

These characteristics have been included in the United Kingdom Test Protocol for many years. In the United Kingdom these are measured using image analysis, so the data is collected routinely, however the information is only used in the granting of plant breeder's rights in a small number of cases.

The characteristics are observed, as per the illustration, on cotyledons from 40 seedlings over two replicates:



Test Guidelines for Oilseed Rape: TG/36/7
Additional Characteristic(s)

Submitting Authority:	<div>United Kingdom</div>	Contact Expert:	Name:	<div>Alex Talibudeen</div>
Date:	<div>13 May 2025</div>	Organization:	<div>Niab</div>	
		Tel.:	<div>+44 1223 342200</div>	
		E-mail:	<div>Alex.Talibudeen@niab.com</div>	

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	^[iii] Note/ Nota
New 1.	VG	Herbicide Tolerance: Imazamox					
QL		absent				ES MAMBO	1
		present				LG CONSTRUCTOR CL	9

- ^[i] indicate type of expression (QL, PQ, QN)
^[ii] indicate method of observation (VG, VS, MG, MS)
^[iii] example varieties to be provided for at least 2 states.

Explanation / Illustration (including extent of the use of the characteristic(s)):

Tests are carried out on 200 plants over two replicates.

Young plants are treated with Imazamox according to instruction on the product label. Observations are made approx. four weeks later:

Note	State	Description
1	Absent	Plants are yellow and dry, susceptible to Imazamox.
9	present	Plants can show some evidence of necrosis, but have green leaf, tolerant to Imazamox.

This characteristics has been included in the United Kingdom Test Protocol for many years.