



Disclaimer: unless otherwise agreed by the Council of UPOV, only documents that have been adopted by the Council of UPOV and that have not been superseded can represent UPOV policies or guidance.

This document has been scanned from a paper copy and may have some discrepancies from the original document.

Avertissement: sauf si le Conseil de l'UPOV en décide autrement, seuls les documents adoptés par le Conseil de l'UPOV n'ayant pas été remplacés peuvent représenter les principes ou les orientations de l'UPOV.

Ce document a été numérisé à partir d'une copie papier et peut contenir des différences avec le document original.

Allgemeiner Haftungsausschluß: Sofern nicht anders vom Rat der UPOV vereinbart, geben nur Dokumente, die vom Rat der UPOV angenommen und nicht ersetzt wurden, Grundsätze oder eine Anleitung der UPOV wieder.

Dieses Dokument wurde von einer Papierkopie gescannt und könnte Abweichungen vom Originaldokument aufweisen.

Descargo de responsabilidad: salvo que el Consejo de la UPOV decida de otro modo, solo se considerarán documentos de políticas u orientaciones de la UPOV los que hayan sido aprobados por el Consejo de la UPOV y no hayan sido reemplazados.

Este documento ha sido escaneado a partir de una copia en papel y puede que existan divergencias en relación con el documento original.

UPOV

TC/XXV/ 7

ORIGINAL: English

DATE: September 1, 1989

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL COMMITTEE

Twenty-fifth Session
Geneva, October 5 and 6, 1989

REPORTS ON WORKSHOPS ON THE EXAMINATION OF VARIETIES

prepared by the Office of UPOV

Pursuant to decisions taken by the Technical Committee and the Council of UPOV, five workshops on the examination of varieties of selected species and on the use of new technology were planned for 1988 and 1989.

Two workshops were held in 1988, one on June 16 and 17 in Wageningen, The Netherlands, on the Examination of Varieties of Lettuce, and the other on September 27 and 28 in Cambridge, United Kingdom, on the Use of New Technology.

The other three workshops were scheduled for 1989: one on June 1 and 2 in Hanover, Federal Republic of Germany, on the Examination of Varieties of Elatior Begonia and Pelargonium, another from September 27 to 29 in New Carrollton and Queenstown, United States of America, on the Examination of Varieties of Soya Bean and the third on October 2 and 3 in Versailles, France, on the Examination of Varieties of Maize.

Short reports on the first two workshops were given in documents C/XXII/10 and C/XXII/10 Add. For the sake of completeness they are reproduced in Annexes I and II to this document. Annex III contains a short report on the Workshop on the Examination of Varieties of Elatior Begonia and Pelargonium. Annexes IV and V contain the programs for the workshops scheduled to take place at the end of September and the beginning of October 1989 on the Examination of Varieties of Soya Bean and on Maize respectively.

[Annex I follows]

WORKSHOP ON THE EXAMINATION OF VARIETIES OF LETTUCE

1. On June 16 and 17, 1988, a Workshop on the examination of varieties of lettuce was held jointly by UPOV and the Dutch variety testing authorities in Wageningen, Netherlands. It was divided into eight sessions, five on June 16 and three on June 17.
2. In Session 1, Mr. W.F.S. Duffhues, Vice-President and acting President of the Council of UPOV and at the same time representative of the Netherlands in the Council of UPOV, welcomed the participants and opened the Workshop. The introductory Session 2 contained speeches by Mr. H.J. Baltjes, RIVRO, on "Technical Aspects of Variety Distances," by Mr. W.A. Brandenburg, RIVRO, on "Taxonomical Aspects of Variety Distances" and by Mrs. A. van der Neut, RIVRO, on "Legal Aspects of Variety Distances." Session 3 covered "The Current System of DUS-Testing on Lettuce" by Mr. N.P.A. van Marrewijk, RIVRO. Session 4, on "New Methods in DUS Testing," included speeches by Mr. A. Howing on "The Application of Electrophoresis in DUS Testing on Lettuce" and by Mr. A. Howing and Mr. W.A. Brandenburg on "The Application of Image Analysis in DUS Testing." Session 5, on "Analysis of Test Results," included speeches by Mr. A.M. van der Burgt, RIVRO, on "The Application of Non-parametric Statistical Tests in DUS Testing on Lettuce" and by Mr. H.J. Baltjes, RIVRO, on "Establishing Variety Descriptions." Session 6 comprised demonstrations in laboratories and in RIVRO's trial fields. Session 7, on "Breeders' Views," included speeches by Mr. D. Barren, President of NTZ, on "A General View on Variety Distances" and by Mr. J. Velema, Rijk Zwaan, on "Practical Breeding and Variety Distances." In a forum discussion Session 8, under the Chairmanship of Mr. H.J. Baltjes, endeavored to enlarge on the discussions that had taken place after each speech and to evaluate the whole workshop before it closed.
3. The Workshop was most successful. It allowed the views of breeders and government experts to be brought closer together. The majority of breeders at the Workshop were of the opinion that minimum differences had become smaller and smaller and that the trend should be stopped. Distinguishing characteristics should have a link to some real improvement of the variety in practical use. Characteristics determined by new methods, like electrophoresis or image analysis, should only be used if that link or correlation could be established. The possibility of giving each characteristic a different weight was also discussed. The Workshop proposed to the Technical Committee that it recommend much closer cooperation with breeders on the above questions and the holding of workshops such as the present one also at the national level, species by species. Users of the varieties should perhaps also be invited to the national workshops.
4. One shortcoming of the Workshop was that the breeders' side was represented almost exclusively by Dutch breeders. The above view on minimum distances is therefore mainly the view of Dutch breeders, and might not necessarily be shared by breeders from other member States. It is planned that speeches and a short report of the discussions, if possible, will be published in the new publication "Journal of Plant Varieties and Seeds," edited by Mrs. Silvey (United Kingdom).

TC/XXV/7
ANNEX II

WORKSHOP ON THE USE OF NEW TECHNOLOGY IN THE EXAMINATION OF NEW VARIETIES

1. On September 27 and 28, 1988, a Workshop on the Use of New Technology in the Examination of New Varieties was held jointly by UPOV and the British authorities at the National Institute of Agricultural Botany (NIAB) at Cambridge, United Kingdom. It comprised two sessions dealing with biochemistry, two sessions dealing with computer technology and one final panel discussion. Each of the sessions contained one or more keynote papers followed by a general discussion.

2. In Biochemistry Session I, held under the chairmanship of Dr. M.S. Camlin of the Department of Agriculture for Northern Ireland, a keynote paper on "Electrophoresis of autogamous species," given by Dr. R.J. Cooke of the NIAB, was followed by discussions on "Cereal cultivar identification, standard ISTA reference methods and further evaluation by UPOV, integration of electrophoretic data into morphology-based schemes." Another keynote paper on "Electrophoresis of outbreeding and vegetatively propagated species," given by Dr. T.J. Gilliland of the Department of Agriculture for Northern Ireland, was followed by a discussion on "Methods for grasses, onions and other species for which morphological characters for distinctness are of limited resolving power. UPOV views on applicability."

3. In Biochemistry Session II, held under the chairmanship of Mrs. V. Silvey, Deputy Director of the NIAB, a keynote paper on "DNA probes for cultivar identification: the future," given by Dr. C. Ainsworth of Wye College, London University, was followed by discussions on "Implications of DNA probe technology for the future of Plant Breeders' Rights, patents, intellectual property rights," and two further keynote papers, on "Novel chromatographic applications" by Dr. A.G. Morgan of the NIAB, and "Possible application of chlorophyll fluorescence testing in DUS" by Dr. A. McMichael of the Department of Agriculture for Northern Ireland were followed by discussions on those subjects.

4. In Computer Technology Session I, held under the chairmanship of Dr. J.K. Doodson, Deputy Director of the NIAB, two keynote papers on "Machine vision for the characterization and identification of cultivars," given by Dr. S. Draper and on "An integrated variety-identification approach for carnations using modern methods," given by Mr. M. Jay, of the Claude Bernard University in Lyon, France, were followed by discussions on "Use of machine vision for DUS."

5. In Computer Technology Session II, held under the chairmanship of Mrs. V. Silvey, Deputy Director of the NIAB, a keynote paper on "Integrated interactive databases," given by Mr. F.G. Pullen, also of the NIAB, was followed by discussions on "Computer systems within the UPOV context."

6. In the panel discussion, held under the chairmanship of Mr. G. Harvey, Controller of the PVRO, a panel composed of Mrs. V. Silvey, Deputy Director of the NIAB, Dr. M.S. Camlin of the Department of Agriculture for Northern Ireland, Dr. J.K. Doodson, Deputy Director of the NIAB, Mr. B. Greengrass, Vice Secretary-General of UPOV and Mr. G.J. Urselmann of COSEMCO engaged in a general discussion on "The wider implications: PBR patents, minimum distances, legal and financial aspects."

7. The Workshop was opened by Dr. G.M. Milbourn, Director of the NIAB, after which an introduction with an explanation of the program was given by Dr. S.R. Draper, Chief Officer of the NIAB Official Seed Testing Station. The Workshop was closed by Mr. J. Harvey, Controller of the PVRO. Responsibility for the arrangements was in the hands of Mr. J. Ardley, Deputy Controller of the PVRO.

8. The Workshop participants had the opportunity to watch demonstrations on the application of electrophoresis, on the use of machine vision for the distinguishing of seed of wheat varieties and onion bulbs and on interactive computerized databases on mini and micro computers, including data queries to a remote site; these were organized by Dr. Cooke, Dr. P.D. Keefe, Mrs. A. Campbell and Mr. A.J. Eade, all from the NIAB.

9. The Workshop was most successful. It allowed a profitable exchange of views to take place between breeders and government experts on a subject that will have a considerable impact on the future of the testing and protection of plant varieties. It was also noteworthy that of approximately 130 participants, a considerable percentage were from the legal field. This Workshop, the second of a series of five, afforded insight into the question of minimum distances, which is taking on greater significance as new technology enables ever-smaller differences between varieties to be detected.

10. Some participants in the Workshop repeated the arguments raised at the first of the series to the effect that it was desirable that differences established by the new technology should bear a relation to the utility of the variety. Some breeders seemed to prefer broad minimum distances while others wished to be certain that their variety would be protected even if it differed only in a minor characteristic; varieties distinguished only by minor morphological characteristics could be very different in performance. The Workshop also discussed the possibility of introducing an inventive step concept in the plant variety system; voices warned of the possible implications of such measures. "Invention" was not relevant to most plant breeding, where objectives were frequently obvious. An alternative way of deterring plagiarism and strengthening the rights granted was a system of dependency; the existing distinctness rules with rather close minimum differences met the need for protection of the products of original breeding, while dependency met the need to inhibit plagiaristic breeding approaches. Some participants warned that it was not desirable to allow every difference detectable with the new methods as the basis for distinctness. That was liable to undermine the breeders' rights system, although dependency might lessen or eliminate the danger.

11. It became clear that the application of the new technology for PVR purposes depended less on solving the outstanding technical problems than on the interpretation of the results, on the concept of what was a variety, and on what was valid breeding and what was not. On these points more discussion with breeders was felt to be necessary in order that a common understanding and agreement might be reached on what should justify protection. Policy-makers would have to set guidelines on which technical experts would base the minimum distances, which should be established species by species.

12. The following observations by individual participants were particularly pertinent:

(i) In future more importance should be attached to checking differences in the genotype instead of looking at the phenotype. Some of the new methods like DNA probes offered help in that area;

(ii) In the context of dependency, breeding history might have to be considered much more than in the past in the judgement of whether a candidate variety should obtain protection; the new technology would frequently enable the accuracy of such histories to be checked.

(iii) It was an open question whether, in the event of the introduction of dependency, which might reduce the pressure on minimum distances and permit the acceptance of any difference that allowed a variety to be clearly distinguishable, the original breeder should only receive equitable remuneration, or whether he should have the right to prohibit others from exercising rights in a dependent variety, particularly when the dependent variety resulted from plagiaristic approaches.

(iv) Should the breeder be able to register lines or mutations around his variety in order to give a greater range of protection around his variety against use by others?

(v) If differences were accepted that were too small, the breeder might have difficulty in maintaining his variety within those narrow limits.

(vi) Breeders should be involved more in all discussions concerning minimum differences. The information available to them should be used more, and they should be invited to more meetings aimed at reaching solutions.

(vii) In future, breeders should also be involved more in the testing of varieties. National authorities would otherwise be unable to deal with the increasing number of applications for more and more species.

(viii) Thought should be given to the question whether characteristics obtained with the help of the new technology could replace a large proportion of the morphological characteristics currently used.

[Annex III follows]

WORKSHOP ON THE EXAMINATION OF VARIETIES OF
ELATIOR BEGONIA AND PELARGONIUM

1. On June 1 and 2, 1989, a Workshop on the Examination of Varieties of Elatior Begonia and Pelargonium was held jointly by UPOV and the German variety testing authorities in Hanover, Federal Republic of Germany. It comprised a total of four sessions, two on June 1 and two on June 2. Before the beginning of Session I, Dr. D. Böringer, President of the Federal Varieties Office in Hanover, welcomed the participants and gave a short introduction to the subject matter of the Workshop.
2. In Session I, held under the chairmanship of Dr. J. Habben of the Federal Varieties Office in Hanover, a keynote paper on "Technical examination of varieties of Elatior Begonia and Pelargonium for Plant Breeders' Rights," given by Mrs. U. Löscher of the Federal Varieties Office, was followed by another keynote paper on "Characteristics and Minimum Distances from the Breeder's View", given by Mrs. J. Schuman of Düsseldorf, Federal Republic of Germany.
3. In Session II, held under the chairmanship of Mr. C. J. Barendrecht of Wageningen, The Netherlands, demonstrations and discussions in small groups at the trials in the glasshouse were followed by plenary discussions and a summary in the meeting room.
4. In Session III, held under the chairmanship of Mrs. U. Löscher of the Federal Varieties Office, a keynote paper on "Assessment of Colors: Color Charts or Colorimeters?" was given by Mr. B. Spellerberg, also of the Federal Varieties Office, and was followed by a keynote paper on "Electrophoresis for Identification of Vegetatively Propagated Pot Plants," given by Mr. J. P. Ohms of the Federal Varieties Office.
5. In Session IV, held under the chairmanship of Dr. D. Böringer, President of the Federal Varieties Office, a keynote paper on "The Implications of Taxonomy, Non-statutory Registration and New Methodology for the Testing of Begonia Cultivars", given by Mr. W. A. Brandenburg of Wageningen, The Netherlands, was followed by a keynote paper on "In-vitro Propagation: Influence on Homogeneity and Stability", given by Mr. W. Preil of Ahrensburg, Federal Republic of Germany, and by a report given by Mr. Bauer of Hillscheid, Federal Republic of Germany, on the identification of Pelargonium varieties on the basis of their phenolic compounds. Session IV closed with final discussions and conclusions.
6. At the Workshop, it was noted that in the case of centralized testing for several countries (e.g. Elatior Begonia and Pelargonium in Hanover for seven or eight countries) and with large collections of varieties in such a place, the question of minimum distances was less of a problem. The crucial point, however, was still the color of the inflorescence.
7. Some of the breeders presented once again, as they had at previous workshops, a demand for greater minimum distances. Some proposed that, in order to reduce copy breeding, UPOV should consider the possibility of requiring greater distances if two varieties were from different breeders, whereas the same breeder would be allowed smaller distances. A system for the registration

of improvements to varieties belonging to one breeder was suggested in that connection. Such a system was considered impossible to implement, however. It was noted that there were fewer problems with minimum distances in agricultural crops because of the existence of VCU tests, and that the introduction of similar tests in the ornamental field, although outside its jurisdiction, might lessen the problem for UPOV.

8. It was regretted by the breeders that several commercial characteristics ---such as rain resistance, rooting time or cutting harvest---were not acceptable. The Workshop noted in this connection that, in order to be considered important and acceptable, a characteristic had to meet certain criteria. The UPOV Test Guidelines did not set a limit on the characteristics that could be used for distinctness. If the breeder thought his variety could only be distinguished by another characteristic, he could inform the authorities, which would then verify whether it fulfilled the requirements. The breeder would have to pay the additional costs, however.

9. The Workshop finally drew the following conclusions:

(i) The Workshop was held in order to discuss the question of minimum distances between varieties amongst breeders, growers, scientists and Plant Variety Protection Offices.

(ii) The Workshop confirmed the recommendation of the Council of UPOV that characteristics for distinguishing varieties should be important in the sense of importance for distinguishing purposes. The Workshop noted that in pot plants, especially in *Elatior Begonia* and *Pelargonium*, more functional characteristics (i.e. characteristics with an economical importance) could be used as, is the case in many other species. This would be helpful in the establishment of reasonable minimum distances between varieties.

(iii) The Workshop confirmed that the varieties should have minimum distances which were in balance between the scientific possibilities and the interests of breeders and growers. A new variety should be able to be recognized as a variety by an average expert of the species concerned. Not just any small difference should lead to the grant of a Plant Breeders' Right.

(iv) The Workshop confirmed that growing tests were indispensable and that new varieties should be compared directly with similar varieties in order to have the same minimum distances, at least for those species with many applications. It could not be left to the applicants alone to declare that their varieties have a reasonable minimum distance to other varieties in certain characteristics.

(v) The Workshop felt that it would be helpful for the applicants to know in advance the minimum distances for the different characteristics which are normally applied. At the same time, it was obvious that the testing authority had to take into account the influence of the special conditions under which the test had been conducted and that in this context, a minimum distance had sometimes to be altered slightly. This should be the responsibility of the experienced technical experts who do the examination.

(vi) During the Workshop it became obvious once more that in the application of comparable minimum distances the knowledge and experience of the technical examiners was of the highest importance and that close contact with the applicants and experienced breeders, growers and scientists was necessary. As far as the assessment of colors was concerned, it was felt that

the use of color charts was indispensable, but that the color charts available contained certain "gaps." The Workshop stressed, therefore, the necessity to develop for the future methods for physical precise color measurement which could complete the use of color charts.

(vii) The Workshop agreed to use in future the same homogeneity standards for vegetatively propagated varieties of Pelargonium and Begonia Elatior as in the past. Otherwise it would be difficult to handle the appropriate minimum distances.

(viii) The Workshop took note of biochemical methods available for the identification of plant varieties. These methods, including the determination of certain genes in the genom of varieties, should be developed in the future to find out whether they could be helpful for the breeders and for the testing authorities, especially when transgene varieties were applied for Plant Breeders' Rights. For characteristics assessed with such methods, the question of minimum distances had to be discussed at a later stage.

[Annex IV follows]

WORKSHOP ON THE EXAMINATION OF VARIETIES OF SOYA BEAN

NEW CARROLLTON AND QUEENSTOWN, MARYLAND, USA, SEPTEMBER 27 TO 29, 1989

Preliminary Program

WEDNESDAY SEPTEMBER 27

- 9.00 Registration
- 9.30 Welcome and Introductions by the Commissioner of the Plant Variety Protection Office
Dr. Kenneth H. Evans
- 9.40 Welcome by United States Secretary of Agriculture or Designate (Mr./Ms./Dr.)
- 10.00 Introduction and explanation of the program
Dr. C. Rose Broome, Examiner for Soybean,
U.S. Plant Variety Protection Office
- 10.15 First Session: Soybean Breeding in the USA
The Current State of Soya Bean Breeding in the USA
Dr. William Kenworthy, Dept. of Agronomy, Univ. of Maryland
- 10.45 Coffee break
- 11.00 Second Session: Distinctness Under the UPOV Convention
The Provisions of the UPOV Convention Relating to Distinctness and Minimum Distances and Current Suggestions for Their Revision"
Mr. B. Greengrass, Vice Secretary-General, UPOV
- 11.30 Third Session: Variety Examination by the US Plant Variety Protection Office
The US Soya Bean Computer Database: Its Role in Determining Distinctness of New Soya Bean Varieties
Dr. C. Rose Broome, Examiner, PVPO
- 12.00 Fourth Session: The UPOV Approach to Distinctness Testing and Minimum Distances
General Principles of the Testing for Distinctness, as seen by a French Examiner
Ms. F. Blouet, INRA/GEVES, France
- 12.30 LUNCH BREAK
- 14.30 Fifth Session: Breeders' Views on Distinctness Testing
Environmental x Genotype Interactions as They Affect Morphological Expression in Soybean Varieties
Dr. Charles E. Caviness, University of Arkansas
- 15.00 Sixth Session: Special Tests for Soya Bean Varieties
New Techniques for Distinguishing Between Soybean Varieties and Their Practical Application
Dr. Reid Palmer, University of Iowa/USDA
- 15.30 Coffee Break

- 15.50 Electrophoretic Determination of Distinctness
Dr. Richard C. Payne
Seed Branch, AMS, U.S. Dept. of Agriculture
- 16.20 Disease and Pest Resistance as Distinctness Characteristics
(Mr./Ms./Dr.....)
- 16.50 Discussion and Question/Answer period
- 18.30 Social Hour
Sponsored for the participants by the American Seed Trade Association
- 20.00 Dinner
Organized for the participants

THURSDAY SEPTEMBER 28

AT THE UNIVERSITY OF MARYLAND, WYE INSTITUTE

- 8.00 Buses leave from Howard Johnson Plaza Hotel to Queenstown, Maryland
- 9.30 Explanation of Soya Bean Field Plots of the University of Maryland
Dr. William J. Kenworthy, Professor, Department of Agronomy
University of Maryland
- 10.00 Field Visits, Demonstrations and Discussions at the Field Plots
- 12.00 Lunch

AT THE FIELD PLOTS OF THE ASGROW SEED COMPANY

- 14.30 Explanation of the Work Done at the Field Plots
Dr. Jim Wilcox, Asgrow Seed Co.
- 15.00 Field Visits, Demonstrations and Discussions at the Field Plots
- 16.30 End of Field Visit and Return to Hotel
Evening free.

FRIDAY SEPTEMBER 29

- 9.00 Welcome by Chairperson- Dr. C. Rose Broome
- 9.10 Report of the American Seed Trade Subcommittee on Minimum Distance
Determination in Soya Bean
Dr. John A. Schillinger, Executive Director of Agronomic
Research, Asgrow Seed Co.
- 9.50 Panel Discussion on Minimum Distances Between Varieties
(Panel to be composed of speakers and)
- 12.00 Closure of the Workshop

WORKSHOP ON THE EXAMINATION OF VARIETIES OF MAIZE

VERSAILLES, OCTOBER 2 AND 3, 1989

Preliminary Draft ProgramMonday, October 2

- 9.00 Registration
- 10.00 Welcome and Introduction to the Workshop
- 10.30 - 13.00 First Session: New Developments in the Examination of Varieties of Maize
Four contributions will be presented:
- . Isoenzymatic Polymorphism and Identification
 - . Seed Certification and New Means of Identification
 - . New Approach to Distinctness of Varieties in France
 - . DUS Studies on Maize in Germany (Federal Republic of) and Their Evolution
- 14.30 - 15.30 Second Session: Plant Breeding Activities and Varietal Identification
Two contributions will be presented on the consequences of the introduction of biotechnology in plant breeding and variety identification.
- 16.00 - 18.00 Visit to the official DUS tests at La Minière
- 18.00 End of first day and return to Versailles
- 20.00 Dinner organized for the participants

Tuesday, October 3

- 9.00 - 11.00 Third Session: New Techniques Available for Variety Description
Four contributions will be presented:
- . 2-D Electrophoretic Method Applied to Maize
 - . Use of the RFLP Technique on Maize
 - . Biometrical Study of RFLP Data
 - . Towards the Automatic Interpretation of 1-D Electrophoretic Patterns
- 11.20 - 13.00 Fourth Session: Relation Between Distinctness and Novelty : Minimum Distances
Three contributions will be presented:
- . Genetic Distance/Variety Distinction
 - . The Use of Morphological, Biochemical and Genetic Characteristics to Measure Distance and to Test Minimum Distance Between Inbred Lines of Maize
 - . ASTA Approach on Minimum Distances
- 14.30 - 16.30 Fifth Session: Legal Aspects and Final Discussion
One contribution will be presented:
- . Legal Interpretation of Technical Considerations
- Final discussions
- 17.00 End of the Workshop