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agreed by the Council of UPOV, only documents that have been adopted by the Council of UPOV and that have not been superseded can represent UPOV policies or guidance.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/XV/7
ORIGINAL: English
DATE: April 10, 1980

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL COMMITTEE

Fifteenth Session
Geneva, March 18 and 19, 1980

DRAFT REPORT

prepared by the Office of the Union

Opening of the Session

1. The Technical Committee (hereinafter referred to as "the Committee") held its fifteenth session in Geneva at the headquarters of UPOV on March 18 and 19, 1980. The List of Participants appears in Annex I to this report.

2. The session was opened by Mr. A.F. Kelly, Chairman of the Committee, who welcomed the participants.

Adoption of the Agenda

3. The Committee adopted the agenda as appearing in document TC/XV/1 after having agreed to add an item "Any other business".

Adoption of the Report on the Fourteenth Session

4. The Committee unanimously adopted the report on its fourteenth session as appearing in document TC/XIV/5. It noted that the text of the Revised General Introduction to the Guidelines for the Conduct of Tests for Distinctness, Homogeneity and Stability of New Varieties of Plants, as reproduced in Annex II of that document, had in the meantime been edited and would be produced shortly under the document number TG/1/2 as well as in the UPOV Newsletter.

Implications of Sophisticated Methods such as Electrophoresis or Biochemical Methods for the Testing of Distinctness

5. The discussion was based on Annexes I and II to document TC/XV/2, containing working papers prepared by experts from the Netherlands and the United Kingdom and on two further working papers, prepared by experts of South Africa and Sweden, which were distributed at the session and are reproduced as Annexes II (South Africa) and III (Sweden) to this document.

6. The Committee had a comprehensive exchange of views on the use of sophisticated methods such as electrophoresis for testing distinctness of plant varieties. It noted that such methods in their various forms were already largely used in the trade for the identification of plant material while their application for testing distinctness in the procedure for granting plant breeders' rights was still under study in most of the member States.

7. It was reported that at the level of government authorities electrophoresis had been used in at least two member States as a method for distinguishing varieties for inclusion in the national list of varieties and in one member State variety protection had been granted on the basis of an electrophoresis test for varieties that had been included in the national list. In addition it was said that several member States checked varieties of certain species systematically with the help of electrophoresis in order to obtain additional information.

8. There was agreement in the Committee that sophisticated methods such as electrophoresis constituted a rapid technique for identifying varieties and that their application might be of special interest in cases where it was difficult to assess distinctness by traditional means. However, a number of implications were seen which had to be carefully evaluated before such methods were used on a broader basis. The high precision of such techniques might reveal minor differences and new characteristics which were not of any practical value and if used inappropriately might undermine the value of plant breeders' rights, as there was a risk that the distance between protected varieties might become too small.

9. The Committee saw a difference between a characteristic which was used routinely to distinguish all varieties, and a characteristic which might be used occasionally to identify particular varieties. In that connection it would be necessary also to consider the implications of the word "important" in Article 6(1) of the Convention and the interpretation normally given to that Article, namely that "important" referred to the importance of a characteristic for distinguishing one variety from another.

10. For those reasons, the use of sophisticated methods such as electrophoresis was to be encouraged only when the methods had been thoroughly tested and the implications of their use had been adequately discussed and agreed upon. While there was agreement that such methods should be further developed and that their application for distinguishing varieties for protection purposes and their consequences for plant variety protection should be studied, it was for the time being recommended that the use of such methods in distinguishing varieties for the purpose of granting rights be restricted to cases where the authority was convinced that a new and important variety existed and the use of such method merely confirmed the fact. Any further development should be discussed within UPOV before additional national decisions were taken. It also was recommended that additional information be collected for the next session.

11. The Committee furthermore underlined that it should also be studied whether the use of electrophoresis or other sophisticated methods, because of the differences they revealed, had repercussions on the requirements of homogeneity and stability.

12. A further advantage of electrophoresis and also of other sophisticated methods was seen for the identification of varieties which otherwise had already been proved to be distinct. In many cases control of the maintenance of a variety could be made easier by the use of marker characteristics. The method was also seen to have advantages in that it provided additional information on a variety. It was underlined that the value of electrophoresis in the trade to identify seed and grain was also not in question.

The Need for the Submission of a Further Seed Sample for Testing in the Second Growing Season

13. Discussions were based on document TC/XV/3 and on a further table distributed in the session and reproduced in Annex V to this report. In addition it was pointed out that page 2 of Annex II to document TC/XV/3 applied to the testing of homogeneity and not to the testing of distinctness.

14. In the discussion there was general agreement that for distinguishing purposes the first sample submitted at the time of or in connection with the application for variety protection was the authentic or reference sample. As to the details the following information was noted and the following views were expressed.

15. In one member State seed or plant material had to be supplied automatically at the latest two weeks after the filing of the application, unless express

permission was given to submit it at a later date, while the other member States demanded seed or plant material only at the time when it was needed for making the tests. Where the authority was already in possession of the seed or plant material of the variety as a result of other activities (testing for value, national list, etc.), the breeder would in some member States specify in his application form that the material was the authentic or reference sample.

16. When the first sample led to the conclusion that the variety did not fulfil the requirement for protection, the application would normally be rejected. Improvement of the homogeneity of the variety and submission of a second sample of the improved variety were not permitted, but in some instances where the result from the first year of tests was not clear some member States were prepared to examine a second sample.

17. To continue tests in the second year with the seed of the first sample had the technical advantage that differences between the results achieved in the two years could be clearly attributed to the differences in the environment. Where a different sample submitted by the applicant in the second year was used, differences in the results might be caused either by differences in the environment or by differences between the samples and it was thus difficult to attribute them to one of those two factors.

18. It was stated that, except in certain cases, one sample could give sufficient information on the homogeneity of a variety for its stability to be estimated.

19. On the other hand, the view was expressed that a further seed sample, although of secondary importance, could give valuable information on the homogeneity and stability of the variety, especially when successive seed lots were compared in crops for which it was not possible for the examining authority to harvest seed itself from the first year plots for sowing in the second year. It released the authorities from the responsibility for storing seed and reduced the amount of seed required from the breeder in the first year.

20. For vegetatively propagated varieties the Committee saw no reason to demand a further sample of plant material. It was mentioned, however, that the submission of a second sample might occasionally be necessary in order to locate an error made in the submission of the first sample.

Harmonization and Cooperation in the Testing of Resistance to Diseases

21. Discussions were based on documents TC/XV/4 and TC/XV/5.

22. During the discussion it transpired that there was a difference in approach between the agricultural experts and the vegetable experts. For agricultural species--unless the breeder expressly demanded it in the Technical Questionnaire--the disease test would generally only be used if normal methods failed to establish the distinctness of the variety under test, while for several vegetable species the disease test was used in the beginning to group varieties and thereby reduce the number of comparisons. The Committee saw no need for aligning the different approaches since they were dependent on the species to which the variety under test belonged.

23. Resistance being a breeding aim, the Committee recognized that it could not in principle exclude resistance as a sole distinguishing characteristic for the granting of plant breeders' rights. Resistance as a distinguishing characteristic was only acceptable, however, if the tests were made under conditions of controlled infection and if the biotype of the pathogen could be clearly defined.

24. Special care had to be taken to require a reasonable degree of homogeneity which would allow for reliable and repeatable results. In the case of lack of homogeneity that characteristic could not be used for distinguishing purposes.

25. It was mentioned that in the Netherlands, whenever a new resistance characteristic was introduced for routine testing, the breeders would be informed through the official gazette. Homogeneity would be demanded for all varieties in respect of characteristics which were used for routine testing. In the case of a resistance characteristic which was not used for routine testing, homogeneity was only demanded if that characteristic was the only characteristic distinguishing that variety.

26. Harmonization of resistance testing and cooperation between the member States in that field had so far been hampered by the difficulty of identifying the biotypes or races (as the classification of biotypes in the various member States often did not correspond), standardizing testing methods and harmonizing reference collections. Several other questions would also require further study, for example the possibility of changes in the host-pathogen relationship through supergenes, mutations of the host, etc.

27. Cooperation could reduce the need for setting up expensive testing facilities and the cost of storing biotypes, but it might also create problems if the required biotype was not indigenous. In addition post-control tests would be necessary which so far had not been included in bilateral agreements.

28. The Committee saw also the danger which the introduction of new resistance characteristics might create for already protected varieties which were only partly resistant to a certain disease. Another breeder might separate by selection resistant plants of that variety to form a new variety which in that case would have to be accepted. The Committee realized, however, that such a possibility was not restricted to the introduction of new resistance characteristics but existed for the introduction of new characteristics in general. The introduction of new characteristics therefore had to be handled with care at all times.

29. It was agreed that the Technical Working Parties for Agricultural Crops and for Vegetables should discuss further the question of resistance to diseases during their coming session and should report on the outcome of those discussions during the sixteenth session of the Committee. If it were found to be useful, the Technical Working Party for Agricultural Crops would set up a subgroup with pathologists to obtain further information on that problem.

The Need for the Testing of the Parental Lines in the Case of a Hybrid Variety in Addition to the Testing of the Variety

30. At the request of the Technical Working Party for Vegetables the Committee discussed the need to test parental lines as well as the variety in the case of a hybrid variety (see document TC/XIV/5, paragraph 23).

31. The Committee noted that, as most vegetable hybrid varieties were single crosses, the testing of homogeneity was to be performed according to paragraph 33 of the revised General Introduction to the Test Guidelines and thus a test of the parental lines was in general not considered necessary. For more complex varieties, however, steps to examine the parents and the formula would also have to be taken. However, in certain cases of doubt it had to be possible to check, also in the case of single crosses, whether or not a variety really was a hybrid.

32. The Committee also noted that in the case of maize the authorities in France, the Federal Republic of Germany and the Netherlands (which in fact were the only examining authorities for maize) always asked for the parents of hybrid varieties, which were then also tested for homogeneity according to paragraph 34 of the revised General Introduction to the Test Guidelines. It was considered that the authorities had to be able to ask for the parents, in order that they might check whether the variety was a hybrid, check the formula and examine the amount of segregation.

33. The Committee referred the question back to the Technical Working Party for Vegetables.

Points Raised by the Chairmen of the Technical Working Parties

34. It was noted that no session of the Technical Working Parties had been taking place since the fourteenth session of the Committee.

35. Mr. A.G. George (United Kingdom), Chairman of the Technical Working Party for Ornamental Plants, reported that a subgroup had met in Denmark to establish working papers for revised Test Guidelines for Euphorbia fulgens and for Poinsettia. It was also planned that a Workshop on chrysanthemums would be held in Hoddesdon (United Kingdom) on November 4 and 5, 1980, for those member States which received test reports from the United Kingdom, in order to inform them on how practical

testing was done. The actual holding of the Workshop would depend on whether genuine interest was shown and on whether sufficient numbers announced their intention to participate.

36. Miss J. Rasmussen (Denmark), Chairman of the Technical Working Party for Agricultural Crops, reported that during the next session of the Technical Working Party it was planned that the draft Test Guidelines for Flax and Linseed, for Sheep's Fescue and Red Fescue, for Ryegrass and for Maize would be completed, and that Working Papers would be started on Test Guidelines for Soya Bean and on revised Test Guidelines for Wheat, for Barley and for Oats. Also, matters of principle such as harmonization and cooperation in the testing of distinctness, homogeneity and stability, the harmonization of reference collections, the testing of diseases and the introduction of sophisticated methods would be discussed. One further problem to be discussed would be that of multiline varieties.

37. There was nothing new to report from the Technical Working Parties for Forest Trees, for Fruit Crops and for Vegetables.

38. The Committee was informed that protection was sought for a multiline variety in France, in the Federal Republic of Germany, in the Netherlands and in the United Kingdom. The Chairman referred the Committee to its former decision as reproduced in documents ST/X/7 and ST/XI/6, to the effect that if sufficiently different from each other, the individual lines of a multiline variety would have to be considered separate varieties and be treated in the same way as other varieties.

Any Other Business

39. The Delegate of the Federal Republic of Germany reported on a discussion which had taken place at the Federal Vine Research Institute at the Geilweilerhof (Federal Republic of Germany) on March 8, 1980, in which representatives of the Vine Breeding Expert Group of the IWO, the FAO, the French National Institute for Agricultural Research (INRA) and the German Federal Varieties Office had participated. The report is reproduced in Annex IV to this report.

40. It was also reported that working groups for gene banks of the European Economic Community had held several meetings, to which private breeders as well as government experts had been invited and at which lists of descriptors had been established. Since working groups for the establishing of descriptor lists for numerous species had also been established, under the auspices of the FAO, the Committee urged its members to observe developments and give UPOV the names of experts to whom any UPOV Test Guidelines that might exist on the species concerned should be sent in order to avoid unnecessary discrepancies between the UPOV Test Guidelines and lists of descriptors being established by gene banks or other organizations. It was further recommended that the members should report back to the Committee on any events going on in that area.

41. The Chairman informed the Committee that the Editorial Committee, in the course of the editing of the revised General Introduction to the Test Guidelines, had amended the beginning of paragraph 34 of that document by replacing the words "For double cross or three-way cross varieties" with the words "For other categories of hybrids", thereby acceding to a wish expressed by ASSINSEL.

42. The Committee asked the Office of UPOV to establish a list of the terms used in the different Test Guidelines in the three working languages of UPOV. The list should first be presented to the Editorial Committee and then to the Chairmen of the different Technical Working Parties for comments.

Program for the Sixteenth Session

43. Finally, the Committee decided to continue, during the coming session to be held from November 10 to 12, 1980, the discussion of the implications of sophisticated methods such as electrophoresis or biochemical methods for the testing of distinctness and that of harmonization and cooperation in the testing of resistance to diseases. The Committee would also be receiving reports at that session from the Chairmen of the Technical Working Parties on the work achieved by those Working Parties, and would be studying Test Guidelines presented to it by the different Technical Working Parties. It would also be continuing its discussion on questions connected with easy mutations, on the basis of a paper to be prepared by the Chairman of the Technical Working Party for Ornamental Plants.

[Five Annexes follow]

LIST OF PARTICIPANTS/LISTE DES PARTICIPANTS/TEILNEHMERLISTE

I. MEMBER STATES/ETATS MEMBRES/VERBANDSSTAATEN

BELGIUM/BELGIQUE/BELGIEN

M. G. VAN BOGAERT, Chef de travaux à la Station d'Amélioration des Plantes de l'Etat, 9220 Merelbeke

DENMARK/DANEMARK/DÄNEMARK

Mr. F. RASMUSSEN, Director, Plantenyhedsnaevnet, Tystofte, 4230 Skaelskør

Mr. F. ESPENHAIN, Administrative Officer, Plantenyhedsnaevnet, Tystofte, 4230 Skaelskør

Miss J. RASMUSSEN, Chairman of the Technical Working Party for Agricultural Crops, Deputy Director, Tystofte Experimental Station, Tystofte, 4230 Skaelskør

FRANCE/FRANKREICH

M. C. HUTIN, Directeur de recherches, GEVES/INRA, G.L.S.M., La Minière, 78280 Guyancourt

GERMANY (FED. REP. OF)/ALLEMAGNE (REP. FED. D')/DEUTSCHLAND (BUNDESREPUBLIK)

Dr. G. FUCHS, Bundessortenamt, Bemeroder Rathausplatz 1, 3000 Hannover 72

Mr. A. BERNING, Dipl. Ing. agr., Vorsitzender der Technischen Arbeitsgruppe für Obstarten, Bundessortenamt, Bemeroder Rathausplatz 1, 3000 Hannover 72

NETHERLANDS/PAYS-BAS/NIEDERLANDE

Mr. M. HEUVER, Chairman, Board for Plant Breeders' Rights, Nudestraat 11, Wageningen

Mr. R. DUYVENDAK, Head, Botanical Research Agricultural Crops, RIVRO, P.B. 32, 6700 AA Wageningen

Mr. F. SCHNEIDER, Chairman of the Technical Working Party for Forest Trees, RIVRO, c/o IVT, P.B. 16, 6700 AA Wageningen

SOUTH AFRICA/AFRIQUE DU SUD/SÜDAFRIKA

Mr. J.U. RIETMANN, Agricultural Counsellor, South African Embassy, 59 Quai d'Orsay, 75007 Paris

SWEDEN/SUEDE/SCHWEDEN

Prof.E. ÅBERG, Vice-Chairman of the National Plant Variety Board, Department of Plant Husbandry, Swedish University of Agricultural Sciences, 750 07 Upsala

SWITZERLAND/SUISSE/SCHWEIZ

Dr. W. GFELLER, Leiter des Büros für Sortenschutz, Abteilung für Landwirtschaft, Mattenhofstrasse 5, 3003 Bern

M. R. GUY, Chef de service chargé de l'examen, RAC, 1260 Nyon

UNITED KINGDOM/ROYAUME-UNI/VEREINIGTES KÖNIGREICH

Mr. A.F. KELLY, Deputy Director, National Institute of Agricultural Botany, Huntingdon Road, Cambridge CB3 0LE

Mr. A.J. GEORGE, Chairman of the Technical Working Party for Ornamental Plants, The Plant Variety Rights Office, Lee Valley Experimental Horticulture Station, Ware Road, Hoddesdon, Hertfordshire EN11 9AQ

II. OFFICER/BUREAU/VORSITZ

Mr. A.F. KELLY, Chairman

III. OFFICE OF UPOV/BUREAU DE L'UPOV/BÜRO DER UPOV

Dr. H. MAST, Vice Secretary-General
Dr. M.-H. THIELE-WITTIG, Senior Technical Officer
Mr. A. WHEELER, Legal Officer
Mr. A. HEITZ, Administrative and Technical Officer

[Annex 2 follows/
Annexe II suit/
Anlage II folgt]

TC/XV/7
Annex II [Original: English]

Working Paper prepared by Experts from South Africa

The Citrus and Subtropical Research Institute at Nelspruit, South Africa is presently developing techniques to identify citrus varieties by means of the chemical composition of specific organs such as leaves, fruit, bark and roots.

Preliminary results with the identification of rootstocks by means of the chemical composition method is showing "promising" results. Briefly, the technique consists of the extraction, cleansing and the separation of the phenolic compounds on thin layer chromomatographic plates by means of a highpressure liquid chromatograph.

The phenolic pattern on thin layer/plates of 8 rootstocks are shown in the photograph below.

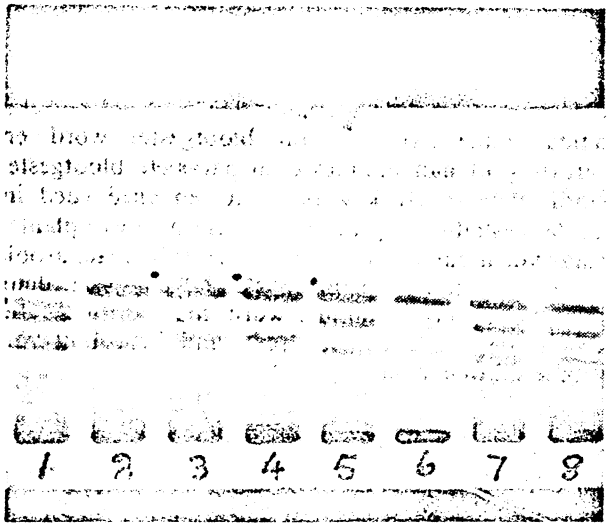

FIG. 1 - Die patroon van fenoliese komponente van die wortels van agt sitrusonderstamsoorte

1. Growweskilsuurlemoen
2. 639-kruising
3. Cleopatra-mandaryn
4. Empress-mandaryn
5. Swingle citrumello
6. *Poncirus trifoliata*
7. Troyer citrange
8. Carizzo citrange

At the qualitative level it is possible to distinguish between the following groups of rootstocks :

I. Rough-skinned lemon (no. I)

2. (a) C. reticulata kinds
   - Cleopatra-mandarin (3)
   - Epress -mandarin (4)

   (b) Swingle citrumelo (5) (Grapefruit x P. trifoliata)

3. Poncirus trifoliata (6)

4. Citranges
   - Troyer citrange (7) (Sweet lemon x P. trifoliata)
   - Carizzo citrange (8) (Sweet lemon x P. trifoliata)

Smaller differences between the types in each group are not easily distinguishable with the thin layer chromomatographic-plates method. However, with the high pressure liquid chromatograph.method, differences can be established

This technique has practicable applications such as :

- The chemical identification can be of great use in the caracterisation of new cultivars.

- Unknown citrus/trees or rootstocks in for example old citrus orchards can be identified

- Evaluation of new crossings.

- The influence of environmental factors such as soil, climate and diseases on the chemical composition of citrus can be a valuable index for tree and rootstock evaluations.

Source : Information Bulletin of the Citrus and
Subtropical Research Institute No 75.
Nelspruit, South Africa.

[Annex III follows]

 [Original: English]

Sophisticated Methods for Testing of Distinctness

(Notes prepared by the Swedish Delegation to the Fifteenth Session of the Technical Committee, March 18 and 19, 1980)

Introduction

Experts from the Netherlands and the United Kingdom have prepared working papers for the discussion on sophisticated methods for the testing of distinctness of varieties at this session of the Technical Committee. In the two working papers the background to the use of such techniques is discussed as is also the methods applied, especially for electrophoresis. The use of such methods is becoming more urgent as new potential cultivars, that closely resembles established cultivars, are being presented for investigations.

In Sweden different types of electrophoresis are being used to determine subtle biochemical differences, usually in proteins or enzymes. The electrophoretic technique used has been horizontal starch gel electrophoresis and electrofocusing as described by Almgård and Clapham (1977). Separation has been made for gliadins, the alkohol soluble proteins of wheat, and isoenzymes. A great number of enzyme systems have been studied but only a few have proved suitable for distinctness testing.

In Sweden testing of distinctness of sugar beat cultivars by use of quantitative characters and statistical methods has been used for granting plant breeders rights to some cultivars.

Distinctness on basis of electrophoresis

Electrophoresis as a tool for determining distinctness has been investigated and to a limited extent applied for six crops. They are: oats, barley, wheat, peas, red clover and red fescue.

Oats. In extracts from seeds, young leaves and roots 18 enzyme systems were studied in 18 cultivars. In five enzyme systems differences suitable for routine testing were found. Esterase was the most useful system and 15 cultivars could be distinguished with this system. Significant variation within cultivars was found in 6 cultivars (Almgård & Clapham 1975).

Selma and two other morphologically very similar cultivars were analysed for different enzyme systems. Selma could be distinguished from the other two only in peroxidase from young leaves. No enzymatic system was found to separate the other two cultivars (Almgård & Norman 1970).

Barley. The morphologically very similar cultivars Cilla, Ingrid, Fitis and WW 6040 were analysed for different enzyme systems. Cilla could be distinguished from the other cultivars in several systems, but most clearly in esterase patterns of leaves. Fitis could be distinguished for catalase. For peroxidase Cilla and Ingrid could be distinguished from the other two cultivars, but not from each other (Almgård & Norman 1970).

In one investigation 32 cultivars were analysed for 14 enzyme systems. Even though the cultivars were quite closely related it was possible to distinguish between many cultivars, but not all (Almgård & Landegren 1974).

The cultivar Pernilla could not be distinguished morphologically from Gunilla, but the two varieties showed greatly different gliadin patterns. Pernilla was registered for Plant Breeders' Rights in 1979 on basis of this difference.

Wheat. In 13 winter and 9 spring wheat cultivars the gliadin and isoenzyme characters were examined after electrophoresis and electrofocusing. In flour there was sufficient variation in gliadin, esterase and acid phosphatase patterns to be of help to distinguish between cultivars. In seedlings, however, the patterns of different enzyme systems varied very little between cultivars (Almgård & Clapham 1977).

The spring wheat cultivars Drabant and Sappo are very closely related and difficult to distinguish morphologically, but they differed markedly in gliadin patterns. The patterns were constant for seed samples from different localities and in spite of variation in nitrogen content.

Sappo was also compared with 4 new potential cultivars derived from Sappo. One cultivar could be distinguished from Sappo and the other cultivars in gliadin pattern. No differences were discovered in the esterase and acid phosfatase patterns (Clapham & Almgård 1978).

Peas. The fodder pea cultivar Timo is derived from the cross Hero x Parvus. Timo could be distinguished morphologically from Hero but not from Parvus. Leaf homogenates from 7-15 day old plants were analysed electrophoretically. In esterase patterns Hero and Timo had two sharp bands, Parvus only one (Almgård 1971).

This additional criterion made it possible to distinguish these three cultivars and Timo was approved for inclusion in the Official List of Cultivars 1970.

Red clover. The cultivar Kora is derived from selection in Disa and could not be distinguished from this cultivar and not from Reko. In seed extracts proteins were separated by electrophoresis. Kora could be distinguished from Disa by the pattern of two slow-moving bands, Reko had an additional fast-moving band (Letter from Almgård to SUF, Sveriges Utsädesförening, Uppsala, 1979-12-05).

Kora will probably be granted Plant Breeders' Right this year on basis of these differences.

Red fescue. The three cultivars Dawson, Polar and Satin are morphologically very similar. Esterases in fluor extracts were separated by electrofocusing. The cultivars showed different esterase patterns.

These differences were accepted as sufficient to distinguish the varieties when Dawson was included in the Official List of Cultivars 1977 and Satin was granted Plant Breeders' Rights 1978 (Clapham & Almgård 1978).

Distinctness on basis of quantitative characters and statistical methods

Sugar beets. New potential cultivars of sugar beets are most often hybrids on various ploidy levels. Even if there are, generally, certain morphological differences between ploidy groups, for example between diploid and triploid monogerms these are not

always consistent. Due to great heterogeneity eventual morphological differences may be hidden.

In an investigation of the possibilities to distinguish cultivars by using quantitative characters, mainly chemical ones, and statistical methods it was found that such possibilities exist (Holm and Johansson 1979). The observed values of the quantitative characters were in the first operation made subject to multivariate analysis of variance. In the next operation the eventual cultivars were in cluster analyses compared in all possible combinations of pairs.

On basis of the results from the investigation mentioned the technique for distinguishing sugar beet cultivars for the acceptance in the Swedish Official List of Cultivars and for the granting of Plant Breeders' Rights was developed. In this technique characters as the following ones are observed: beet weight, sugar content, sugar yield, sodium content, potassium content, inorganic phosphate, and citrate.

Cultivars accepted in regard to distinctness determined by electrophoresis or on basis of quantitative characters and statistical methods

Methods based on techniques as described above have been used as complements to environmental methods for decisions on the acceptance of a new cultivar in the Swedish Official List of Cultivars or for granting Plant Breeders' Rights. In some cases they have been decisive. In the following list such cultivars are listed.

Crops	Cultivars	Accepted in the Official List, year	Granted Plant Breeders' Rights, year
Barley	Pernilla		1979
Peas	Timo	1970	
Red fescue	Dawson	1977	
	Satin		1978
Sugar beets	Annika		1977
	Carina	1978	
	Donor		1977
	Monatunno		1978
	Monika		1977
	Monitor		1977
	Monoricca	1978	
	Novahill		1977
	Primahill	1979	1977
	Trika		1977
	Volo	1978	
	Zumo		1977

Literature

Almgård, G — A deviating isoenzyme pattern: decisive criterion for the distinction and release of a new Pisum cultivar. - Ibid, 3, 1971, 7-8.

Almgård, G. & Clapham, D. Isoenzyme variation distinguishing 18 Avena cultivars grown in Sweden. - Swedish J Agric. Res. 5, 1975, 61-67.

Almgård, G. & Clapham, D. Swedish wheat cultivars distinguished by content of gliadins and isozymes. - Ibid 7, 1977, 132-142.

Almgård, G. & Landegren, U. Isoenzymatic variation used for the identification of barley cultivars. - Z Pflanzenzucht 72, 1974, 63-73.

Almgård, G. & Norman, T. Biochemical technique as an aid to distinguish some cultivars of barley and oats Agri Hortique Genetica 28, 1970, 117-123.

Clapham, D. & Almgård, G. Biochemical identification of cultivars leads to award of Breeders' Rights. - Agri Hortique Genetica 28, 1978, 88-94.

Holm, E. & Johansson, E. Undersökning av sockerbetornas särskiljbarhet. - Medd. Statens Centrala Frökontrollanstalt 54, 1979, 75-85.

March 14, 1980.

[Annex IV follows]

Subject: Joint discussions at the Federal Vine Research Institute at the Geilweilerhof between representatives of the Vine Breeding Expert Group of the IWO, the FAO and the German Federal Varieties Office (BSA), March 4, 1980

After the UPOV Guidelines for the Testing of Vine Varieties, which were originally based on French and German working papers, had entered into force and duly been distributed through the IWO to all the vine breeding institutes of IWO member States, the Vine Breeding Working Group of the IWO decided, under the chairmanship of Professor Alleweldt, to draw up a table of characteristics for IWO purposes covering, among other things, wild forms of vines that afforded qualitative characteristics for vine varieties and also propagating material for vines. What is more, at the FAO, the International Board of Plant Genetic Resources (Working Group on Descriptors for Grapes) has also undertaken the drafting of a Table of Characteristics for Vines. Professor Alleweldt invited the French and German authors of the UPOV Guidelines on Vines, together with representatives of the FAO and IWO, to a meeting with a view to ascertaining whether it was possible to draw up a table of characteristics that could be used by all three Organizations. The individual representatives were the following:

IWO: Professor Alleweldt, Geilweilerhof
Mr. Huglin, Colmar

FAO: Professor Blaich, Geilweilerhof

INRA: Mr. Truel, Montpellier

BSA: Dr. Böringer
Dr. Schreiner
Dr. Lotz
Two other Geilweilerhof representatives

The discussions were based on the UPOV Test Guidelines and on a draft each from the FAO and IWO. The discussions produced the following results, which Professor Alleweldt will set down in a comprehensive report to be voted upon by all the participants:

(1) An attempt should be made to draw up a single list of characteristics that could be used by all three Organizations. Ideally it should be called "Universal List of Characteristics of the Genus Vitis".

(2) The editorial work is to be taken on by the IWO. An Expert Committee should be set up at the IWO, which would be responsible for drawing up the list and making such changes as will be necessary. FAO and UPOV should be officially invited to send experts to take part in this work.

(3) The system for quantitative, qualitative and alternative characteristics should be taken from the UPOV Test Guidelines.

(4) In the Universal List, every characteristic should be given a code number according to the numerical system. Certain numbers should be left free to allow for subsequent amplification of the List of Characteristics.

(5) There is concern within the IWO that for certain quantitative characteristics, such as grape size in wild forms, the 1-9 scale will not be sufficient. It is recommended that one should at the outset proceed as UPOV does, in other words give the Note 1 to values below 1 and the Note 9 to values above 9. At the same time it should be suggested that one add the true measurement to the Note given in such cases.

(6) The UPOV model should be used for the sequence of characteristics.

(7) As at UPOV, phenological data that are not value characteristics should be summarized at the end of the List of Characteristics.

(8) Professor Alleweldt has undertaken to draw up the first draft of the Universal List according to the above principles and send it to all the participants. A second discussion among experts is expected to be necessary (probably in Colmar) before the paper can finally be discussed within the IWO.

[Annex V follows]

TC/XV/7
ANNEX V/ANNEXE V/ANLAGE V [Original: English]

UPOV WORKSHOP CEREALS

JULY 1979

Testing Homogeneity Of Wheat, Barley And Oats

Winter Varieties	D	DK	F	UK	NL	S
Year I:						
Ears submitted by breeder		200	200	500	200	200
Ears sown in autumn		100	150	300	100	120
Ears sown in spring		50	30	100		50
If number of aberrant rows sown in autumn >		3	1 (3)	3 or 6 x)	3	2 (3)
- the application is rejected			x	x	x	
- is cont. with new submission		x				x
Seed submitted by breeder (kg)	4	5	4	5	3	1
Drilled plot population	2000	2000	2000	6000	2500	5000
If number of aberrant plants sown in autumn >	0,3%		0,3%	1 or 2% x)	0,3%	0,1%
- the application is rejected				x	x	
- is cont. with new submission	x	x	x			x
Year II:						
Ears submitted by breeder	170	200	200			200
Ears sown in autumn	100	100	130			120
Ears sown in spring	50	50	30			50
If number of aberrant rows sown in autumn >	3	3	1 (3)			2 (3)
- the application is rejected			x			
- is cont. with new submission	x	x				x
Ears harvested from 1st year drilled plots				450		
Ears harvested from 1st year ear rows			72			
Ears sown in autumn			48	300		
Ears sown in spring			24	100		
If number of aberrant rows >			1 (3)	3 or 6 x)		
- the application is rejected			x	x		
Seed submitted by breeder (kg)	4	15	10	14		3
Drilled plot population	2000	2000	2000	6000	2500 xx)	5000
If number of aberrant plants sown in autumn >	0,3%		0,2%	1 or 2 x)	0,3%	0,1%
- the application is rejected				x	x	
- is cont. with new submission	x	x	x			x

x) UK: 1% or 3 in 300 for Barley, 2% or 6 in 300 for Wheat and Oats.

xx) NL: sown from 1st seed submission.

[End of Annex V and