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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

**TECHNICAL WORKING PARTY
FOR
AGRICULTURAL CROPS****Eighteenth Session****Belfast, United Kingdom, June 13 to 16, 1989**

REPORT

adopted by the Technical Working Party
for Agricultural crops

Opening of the Session

1. The eighteenth session of the Technical Working Party for Agricultural Crops (hereinafter referred to as "the Working Party") was held in Belfast, United Kingdom, from June 13 to 16, 1989. The list of participants is reproduced in the Annex to this report.

2. Prof. J.A. McWha and Dr. M.S. Camlin welcomed the participants to the Plant Testing Station at Crossnacreevy near Belfast. The session was opened by Mr. D.P. Feeley (Ireland), Chairman of the Working Party.

Adoption of the Agenda

3. The Working Party adopted the agenda of its eighteenth session, as reproduced in document TWA/XVIII/1, after having agreed to a change in the order of items for discussion, deleted items 14(v) and (vi), and agreed to discuss proposals for a new chairman of the Working Party.

Important Decisions Taken During the Twenty-Fourth Session of the Technical Committee

4. The Chairman gave a short report on the important decisions taken during the last session of the Technical Committee, referring to the full report on that session, reproduced in document TC/XXIV/6, for further information.

Summary Report on the Work of the Technical Working Party on Automation and Computer Programs

5. Dr. M.-H. Thiele-Wittig reported briefly on the seventh session of the Technical Working Party on Automation and Computer Programs, referring to the full draft report which will be reproduced as document TWC/VII/20 Prov. At that session, the Working Party discussed the following items and took the following decisions:

(i) It continued its evaluation of the Combined Over-Years (COY) Analysis. It finally recommended that, for the application of the COY analysis to grass varieties, a 1% significance level should be used for data of 2 as well as 3 years.

(ii) It studied further application to varieties of sugar beet, leek and onion. It recommended to the Technical Working Parties for Agricultural Crops and for Vegetables, that for all agricultural and vegetable species, measured characteristics should no longer be analyzed with the 2 out of 3 method but with the COY analysis and asked to be informed of any problems foreseen in this respect.

(iii) It discussed a proposed refinement of the COY method which uses a grouped COY analysis to calculate the residual variance and will continue studying its application.

(iv) It studied the procedure for the calculation of long range LSD from data of past trials for cases where a limited number of varieties under test would not allow the application of the COY analysis.

(v) It noted a further progress in a possible alternative to the UPOV method for testing homogeneity in cross-fertilized plants through the combined over years uniformity (COU) criterion. The method was considered to offer great advantages over the present method, but it would require further study during the coming year.

(vi) It prepared some tables for the testing of homogeneity of self-fertilized species. The maximum number of tolerable off-types was calculated for different sample sizes and for different combinations of the nominal standard and acceptance probabilities. It will distribute these tables to the other Technical Working Parties to facilitate the selection of appropriate tolerances to be fixed in the individual Test Guidelines.

(vii) It discussed possibilities for a common data structure for the handling of electrophoresis data by computer and will extend its discussions at the coming session.

(viii) It discussed again the method for the establishment of stabilized variety descriptions and experts will again apply a computer program prepared for that purpose.

(ix) It discussed at length the question of international access to data stored by the competent authorities. It will set up a list of data for which such access would be desirable and will ask the Technical Committee and the Administrative and Legal Committee to recommend a coordinated authorization. It will closely follow a project between The Netherlands and the United Kingdom to develop a corporate data structure. It agreed that it was desirable to develop an international distributed data base of information, with individual information stored in each member State and a common system of query and retrieval.

(x) It had discussions on the revision of certain model forms, on the cooperation with breeders in the testing of varieties, on new methods other than electrophoresis and on minimum distances.

Report on the Subgroup Meeting on Wheat, Barley and Oats

6. The Working Party noted the UPOV circulars U 1386 containing drafts for the revision of the Test Guidelines for Wheat, Barley and Oats, and U 1409 containing proposals for the integration of electrophoresis and machine vision into the Test Guidelines for Cereals, and document TWA/XVIII/5 containing the main points agreed in respect of electrophoresis during the meeting of the Subgroup on Cereals held in Hanover, Federal Republic of Germany, in April 1989. The Chairman pointed out that the Subgroup recommends adding characteristics obtained with the help of electrophoresis as additional characteristics to the above Test Guidelines for Cereals. These characteristics would open the possibility (a) of reducing the DUS tests to one year only and (b) of reducing the number of characteristics in the present Test Guidelines. The expert from Denmark will prepare new drafts for revised Test Guidelines for Wheat, Barley and Oats for distribution to the Working Party for comments. The next meeting of the Subgroup is foreseen for May 14, 1990, in Wageningen, The Netherlands, the day before the next session of the Working Party.

New Methods, Techniques and Equipment in the Examination of Varieties;
Summary Report on the Workshop, Compilation of an Inventory of Methods, and
Proposals for Future Use

7. The Working Party noted that in 1988 two Workshops had been held, one on the examination of varieties of lettuce in Wageningen, The Netherlands, on June 16 and 17, and another on the use of new technology in Cambridge, United Kingdom, on September 27 and 28. In 1989, one Workshop had been held on the examination of varieties of *Elatior Begonia* and *Pelargonium* in Hanover, Federal Republic of Germany, on June 1 and 2, and two other workshops will be held during the current year, one on the examination of varieties of soya bean, to be held in New Carrollton and Queenstown, Maryland, United States of America, from September 27 to 29, and another on the examination of varieties of maize, in Versailles, France, on October 2 and 3. The Working Party furthermore noted document TC/XXV/4 which in part repeated the result of discussions held during its last session on the electrophoresis tests on wheat and the introduction to the various applications of electrophoresis at the biochemistry laboratory of the GEVES in connection with variety registration and seed certification at the testing station of the Centre de recherches de Poitou/Charentes of the INRA at Le Magneraud, Surgères, France. The Working Party also noted document TWA/XVIII/7 containing a Note on the Incorporation of New Technologies in the UPOV Test Guidelines, prepared by experts from France.

8. The Working Party confirmed the decisions of the Subgroup on Cereals (see paragraph 6 above) to introduce characteristics obtained with the help of electrophoresis in the Test Guidelines for Wheat, Barley and Oats as new characteristics without an asterisk. Each band should thereby be considered as a separate characteristic. However, only those bands should be accepted which fulfilled the normal requirements for acceptance valid for any other new characteristic and for which a clear presence or absence could be observed. The proteins and methods to be admitted should be:

<u>species</u>	<u>proteins</u>	<u>methods</u>
barley	B, C and D hordeins	preferably SDS-PAGE, second choice: PAGE pH 3,1
wheat	gliadins, glutelins	PAGE pH 3, 1, SDS-PAGE
oats	prolamins	PAGE pH 3,1

By September 1, 1989, Mr. Guiard (FR) will prepare a paper with the protocol for the SDS-PAGE method and Dr. Cooke (GB) a paper with a more detailed protocol for the PAGE pH 3,1 method and an example for and a description of the planned ring test and explain what was planned to be studied in that ring test. Those papers should be presented to the Technical Committee for information. The Technical Committee should also be informed of the aim to finalize the revision of the Test Guidelines for Wheat, Barley and Oats including the electrophoresis tests during the coming session of the Working Party for presentation to the professional organizations for comments. The professional organizations should be informed of the planned discussions during the coming session on the introduction of characteristics obtained with the help of electrophoresis in the Test Guidelines for Cereals, and be invited to send technical experts as observers.

9. The Working Party decided that for the introduction of electrophoresis characteristics the normal homogeneity standard of 3 in 100 should be applied when such a characteristic was used as the only distinguishing characteristic for the candidate variety concerned. If the electrophoresis characteristics were not necessary for the distinction of a given candidate variety, for a transitional period twice the tolerance (6 in 100) should be applicable.

10. The Working Party agreed that because of the introduction of electrophoresis and the sufficient number of morphological characteristics at present, there was no need to introduce image analysis for cereals. More knowledge was to be gained before rediscussing the possibilities of its introduction.

11. The Working Party noted the explanations given by Mr Guiard (FR) on document TWA/XVIII/7. Mr. Guiard highlighted the three possible uses of electrophoresis, as a tool for variety identification, as a tool to assist in taking a decision on distinctness and as a tool to take a decision on distinctness. He also explained the studies in France to incorporate enzyme polymorphism of maize in the distinctness studies for new varieties and the different weighting of characteristics according to the information on their genetic background. He closed with the studies on image analysis techniques on carnation petals, which was a more objective measure for shapes. With the use of different filters, areas of different colors could also be measured.

12. Dr Camlin (GB) introduced Annex V of document TC/XXV/4 on the "Integration of Electrophoresis into UPOV Test Guidelines" with proposals for ryegrass. He highlighted the need to adopt standardized methods and characteristics, to agree on standardized discrimination and minimum distances, to establish ring-test procedures for the checking of results, to consider homogeneity criteria for electrophoresis characteristics and to produce an authenticated data base for common knowledge collection. The Working Party agreed to the suggestion that it study in the beginning starch gel electrophoresis on only four isozyme systems, Phosphoglucosomerase (PGI), Acid Phosphatase (ACP), Isocytase Dehydrogenase (IDH), and Glutamin Oxalo Transaminase (GOT), together with PAGE on seed globulins. The start should however be made with PGI. In order to use the limited time to best purpose, countries should, however, in the first instance concentrate on cereals.

13. Mr Baltjes (NL) introduced Annex VI of document TC/XXV/4 on the "Experiences in the Use of Electrophoresis in Poa pratensis L." He highlighted the method of isoelectric focusing on seeds and the PAGE method on plantlets. The whole study was still at the experimental stage and would be continued. For seeds admixtures created problems, for plantlets a good sampling scheme needed to be developed.

14. The Working Party noted that ISTA planned to hold its fourth international symposium on varietal identification in Ames, Iowa, USA, from August 12 to 18, 1990, during which it would discuss the use of new methods in the testing of varieties.

Statistical Methods

15. Dr. Weatherup (GB) introduced a paper on "The Development of a Distinctness Criterion" distributed during the session and reproduced subsequently as document TWA/XVIII/8. He highlighted the historical development from the original UPOV criterion of the t-test criterion over the t-score criterion to the COY criterion and the COY criterion modified by regression. He indicated the reasons for each change and closed with the COY criterion after 2 years of testing, the study of the estimation of the variation from long range data for small numbers of varieties and the possibility of applying moving groups.

Final Discussion on Draft Test Guidelines

Test Guidelines for Triticale (TG/121/1(proj.))

16. The Working Party noted that no comments had been received in writing on the draft Test Guidelines for Triticale as reproduced in document TG/121/1(proj.). It therefore only made the following main changes in that document:

(i) Material required: To have the words "100 ears" replaced by "150 ears"

(ii) Conduct of Tests: To have in paragraph 1 the word "normally" added after "should" and to have the third sentence of paragraph 3 replaced by the following: "Each test should include about 2,000 plants which should be divided between two or more replicates. If tests on ear-rows are conducted at least 100 ear-rows should be observed."

(iii) Table of Characteristics:Characteristics

- 1 to have the bracketed part deleted
- 6 to be placed after characteristic 7
- 18 to receive drawings for explanation to be prepared by experts from Spain
- 25 to have in the explanations a better separation of the three languages
- 26 to receive explanations to be prepared by experts from the Federal Republic of Germany

Test Guidelines for Sorghum (TG/122/1(proj.))

17. The Working Party noted that no comments had been received in writing on the draft Test Guidelines for Sorghum as reproduced in document TG/122/1(proj.). It therefore only made the following main changes in that document:

(i) Conduct of Tests: To make changes comparable to those made for Triticale.

(ii) Table of Characteristics:Characteristics

- 8 to 10 to have the word "Leaf" replaced by "Flag leaf" and to have the words "of(to) flag leaf" deleted
- 8 to read: "Flag leaf: extension of discoloration of midrib" with the states from "absent or very weak" to "very strong"
- 8, 9 to be recorded at panicle emergence
- 18 to have the words "of flower" added before the bracket
- 38 to have the words "ammonium citrate and iron" in the explanation replaced by "ferrous ammonium citrate"; the Office of UPOV will enquire whether the EEC norm has been revised in the meantime.

Test Guidelines for Peas (Revision) (TG/7/5(proj.))

18. The Working Party noted document TG/7/5(proj.) containing a draft for revised Test Guidelines for Peas, document TWV/XXII/4 containing a proposal for additional characteristics, document TWV/XXII/5 containing comments on the above draft Test Guidelines and comments distributed during the session. It finally proposed to the Technical Working Party for Vegetables the following main changes in document TG/7/5(proj.):

(i) Table of Characteristics:

Characteristics

- 1 to be taken out of the Table of Characteristics but still to be used for grouping and to have the indication of the stage deleted
- 14 to have the growth stage 40 included in the Key for Growth Stages
- 20 to have the states "few, medium, many"
- 26 to be placed after characteristic 28
- 31, 32 to be combined with the first state reading: "absent or very sparse (Lisa, Myzar, Orfac)"
- 35 to be aligned with the change in characteristic 20 and to have the third sentence of the explanations read: "The observations should be made when highest nodes produce flower buds which do not open."
- 58 to read: "Pod: green color of immature seed" with the states "light, medium, dark"

(ii) Additional Characteristics: The Working Party agreed on the inclusion of characteristics 1 to 7 on pages 1 to 4 of document TWV/XXII/4. It could not agree to the inclusion of the characteristics on the remaining pages of that document, as the Test Guidelines should not contain a list of negative characteristics.

(iii) Explanations on the Table of Characteristics: The explanations were considered very useful but too long for the Test Guidelines, and therefore running the risk of not being read. The information should be separated into the normal explanations and genetic background information, the latter to be placed in a separate annex to the Test Guidelines. The Working Party asked the Technical Committee to discuss this item in general and to decide on what further information should or could also be added to other Test Guidelines.

Revision of the UPOV Model for a Report on Technical Examination

19. The Working Party noted documents TC/XXIV/4 and TC/XXIV/6, paragraphs 72 to 74, giving a report on the discussions held during the last session of the Technical Committee, as well as the document TC/XXV/6 containing the comments and proposals received in the meantime from the experts of the member States. In going through the document TC/XXV/6, the Working Party made the following remarks:

(i) General Remarks: The Working Party agreed to the proposals 3(iv) to (vii), but disagreed with the proposals 3(iii) and 3(viii). In all forms the items above the heading should be placed below that heading but separated by a line from the rest of the items.

(ii) Report on Technical Examination: The Working Party agreed to the comments 1, 1 to 4, 5(i), 6, 8(i), 9 and 10(i) and (iv) on page 2 of Annex I. It furthermore proposed to insert the word "number" after the word "Reference" in lines 1 and 4 of page 1 of Annex I and to replace the words "Application number" in the third line of page 3 of Annex I by "Reference of requesting authority (bilateral agreements only)."

(iii) Interim Report on the Examination of a Variety: The Working Party agreed to the changes corresponding to those in Annex I. In addition, it agreed to comments 6(i) and 9(ii).

(iv) Request for Examination Results: The Working Party agreed to the comments 1(i) and (ii), 2, 3, 5, 6, 7(i), 8, and 9(ii). It disagreed with the comments 9(i), 9(iii) and 11.

Cooperation with Breeders in the Testing of Varieties

20. The Working Party noted document TC/XXIV/6, paragraph 65, containing the results of the discussions held during the last session of the Technical Committee, as well as document TC/XXV/5 containing the answers received from the member States on a questionnaire sent out by the Office of the Union according to decisions taken by the Technical Committee. It further noted that the results of the second year of the pilot project in Denmark had not been as promising as those of the first year. It seemed that breeders would need more guidance by the competent authorities in the assessment of the characteristics. The expert from France informed the Working Party of its plans to instruct breeders in testing with the aim of the breeder doing tests for the first year, permitting the competent authority to take decisions already after one year of additional official tests.

States of Expression in Test Guidelines

21. The Working Party noted document TC/XXIV/6, paragraph 61, document TC/XXIII/5 and document TC/XXIV/3, paragraphs 99 to 107. In going through document TC/XXIII/5, it agreed to the examples 7.1 to 7.3, 9.1, 9.2 (with a change of order), 9.3 to 9.5, 10, 11.2 to 11.6, 12.1 to 12.3, 12.4 and 12.5 with reservations, 12.6 to 12.8, 13.2, 14.1, 14.3, 15.1 to 15.3, 16.1 to 16.8. It disagreed with the examples 8.1, 11.1, 12.9, 13.1 and 14.2.

Discussion on Working Papers on Test Guidelines

Test Guidelines for Bent (Revision)

22. The Working Party noted document TWA/XVIII/3 containing a working paper on the revision of the Test Guidelines for Bent, prepared by experts of the Subgroup on Bent, as well as document TWA/XVIII/3 Rev., containing a revised version of that document prepared by the Office of the Union. The Working Party finally made the following main changes in document TWA/XVIII/3 Rev.:

- (i) Front Page: The Latin name on the front page to read "Agrostis spp."
- (ii) Conduct of Tests: Paragraphs 1 and 2 to be copied from Triticale.
- (iii) Table of Characteristics:

Characteristics

- 1 to have in the column for example varieties the following indicated:
A. canina (2), A. capillaris, A. stolonifera (4), A. gigantea (6)"
- 6, 13, 14 to have the words "flowering head" replaced by "inflorescence"

- 9 to read: "Time of inflorescence emergence"
13 to have the last 4 words replaced by "when fully expanded"
14a to be deleted.

Test Guidelines for Ryegrass (Revision)

23. The Working Party noted document TWA/XVIII/2 containing a working paper on the revision of the Test Guidelines for Ryegrass, prepared by experts of the Subgroup on Ryegrass, as well as document TWA/XVIII/2 Rev., containing a revised version of that document prepared by the Office of the Union. The Working Party finally made the following main changes in document TWA/XVIII/2 Rev.:

(i) Subject of these Test Guidelines: Paragraph 3 to have an additional sentence added reading: "A combination of the following characteristics would be helpful for that purpose: awns, fluorescence, leaf size, growth habit, persistence, electrophoresis."

(ii) Conduct of Tests: Paragraphs 1 and 2 to be copied from Triticale.

(iii) Table of Characteristics:

Characteristics:

2.05 to have the addition of "A" in the column "Plot" and the experts from the United Kingdom to check the example variety "Loretta"

2.07 the expert from the United Kingdom to check the example variety "Wilo"

1.07 + 2.11 to receive an asterisk "*p" and to read: "Flag leaf: width"

(iv) Literature: The expert from the United Kingdom to indicate literature.

(v) Technical Questionnaire: Paragraph 1 to have the subgroups:

- "(i) Annual (Westerwold) ryegrass
- (ii) Biennial (Italian) ryegrass
- (iii) Perennial ryegrass
- (iv) Intermediate (Hybrid) ryegrass",

and after paragraph 7.2 a new subparagraph to be added reading: "In the case of an intermediate type, please state whether the variety resembles more the biennial or perennial varieties."

Test Guidelines for Kentucky Bluegrass (Revision)

24. The Working Party noted document TWA/XVIII/4 containing a working paper on the revision of the Test Guidelines for Kentucky Bluegrass, prepared by experts of the Subgroup on Kentucky Bluegrass, as well as document TWA/XVIII/4 Rev., containing a revised version of that document prepared by the Office of the Union. The Working Party finally made the following main changes in document TWA/XVIII/4 Rev.:

(i) Material Required: The quantity to be supplied should be "600 g"

0804

(ii) Conduct of Tests:Paragraphs

- 1, 2 to be copied from Triticale
- 4 to have the second sentence deleted
- 5 to have the words "the seed" in the last sentence replaced by "sowing"
- 6 to have the title "Special tests" and to have the words "(6-10 leaves)" added after the word "seedlings" and thus replace the bracketed content of characteristics 1 to 6.

(iii) Grouping of Varieties: The grouping characteristics in paragraph 2 would be characteristics 1, 15 and 22.

(iv) Table of Characteristics:Characteristics

- 2 to have the words "front part" replaced by "margins"
- 9 state 7 to have the example varieties "Bluebell, Sydspot"
- 12 state 5 to have the example varieties "Fylking, Primo" and state 7 "Monopoly"
- 19 state 2 to have the example variety "Julia"
- 20 state 2 to have the example variety "Baron"
- 22 to have the words "at end of flowering" replaced by "when fully expanded"

(v) Literature: There would be no special literature indicated.

Test Guidelines for Safflower

25. The Working Party noted document TWA/XVIII/6 containing a working paper for Test Guidelines for Safflower, prepared by experts from Spain. It finally made the following main changes in that document:

(i) Material Required: To have the 4th sentence of paragraph 1 deleted.

(ii) Methods and Observations: To have paragraph 2 copied from Sorghum, however, with the figures "4 in 60."

(iii) Table of Characteristics:

Characteristics

1 and following to foresee a column for the indication whether the characteristic should be measured or observed visually.

1 to 6 the characteristics on the first leaf to be observed at the 6 leaves stage

- 2 before this characteristic a new characteristic to be inserted reading:
"Flage leaf: width of blade" with the states "narrow, medium, broad"
- 3 to be deleted
- 4 to have the first state "absent or very short"
- 5 to have the states from "absent or very few" to "very many"
- 7 to read: "Plant: height 15 days after emergence" with the states from
"very low" to "very high"
- 8 to read: "Time of flowering (50% of plants with 1 open flower)"
- 9 to 21 the characteristics of the plant, the petal, the sixth leaf and the
capitulum to be observed at the time of flowering
- 9 to 11 to start with "Plant: "
- 9 to have the bracketed addition "(from ground level)"
- 12 to be split into two characteristics, the first to read: "Petal: color"
with the states "white, yellow, orange" and the second to be placed after
characteristic 21 and to read: "Petal: change of color" with the states
"absent, present"
- 13 to read: "Sixth leaf: green color" with the states "light, medium,
dark"
- 14 after this characteristic a new characteristic to be inserted reading:
"Sixth leaf: width" with the states "narrow, medium, broad"
- 16 to have the first state placed after "ovate"
- 17 to have the states from "absent or very few" to "very many"
- 19 to read: "Capitulum: length of middle bracts"; after this characte-
ristic a new characteristic to be inserted reading: "Capitulum: width
of middle bracts" with the states "narrow, medium, broad"
- 20, 21 to start with "Capitulum: "
- 22, 25, 26 to be measured
- 24 to receive an asterisk (*)
- 26 to have the states "low, medium, high"

(iv) Technical Questionnaire: To have under paragraph 5 the characteris-
tics 7, 16 and 18 deleted and the new characteristic 21b added.

Minimum Distances Between Varieties,
Definition and Examination of Hybrid Varieties

26. Lack of time did not permit the Working Party to discuss these two items.

Status of Test Guidelines

27. The Working Party agreed that the draft Test Guidelines for Triticale and for Sorghum should be sent to the Technical Committee for final adoption.

28. The Working Party agreed that the draft Test Guidelines for Peas (Revision) and the comments made during the current session, should be transmitted to the Technical Working Party for Vegetables. If it agreed to these comments, the document could be sent to the Technical Committee for final adoption.

29. The Working Party agreed that the draft Test Guidelines for Bent (Revision), Ryegrass (Revision), Kentucky Bluegrass (Revision) and Safflower should be sent to the professional organizations for comments.

Proposal for a New Chairman

30. Mr. Feeley informed the Working Party that he had been transferred within his Ministry to other tasks and thus would no longer be able to attend and chair sessions of the Working Party. The Working Party regretted his departure and expressed its thanks for the excellent chairing in the past. It proposed to the Technical Committee that it propose to the Council to elect Dr. M. Camlin (GB) as the new Chairman of the Working Party.

Future Program, Date and Place of Next Session

31. At the invitation of the expert from The Netherlands, the Working Party agreed to hold its nineteenth session in Wageningen, The Netherlands, from May 15 to 18, 1990. The session will start in the morning of May 15 and end at noon on May 18. A meeting of the Subgroup on Cereals will be held at the same place in the afternoon of May 14, 1990, and will start at 2 p.m. The Working Party plans to discuss or rediscuss the following items at its next session:

- (i) Important decisions taken during the preceding session of the Technical Committee
- (ii) New methods, techniques and equipment in the examination of varieties
- (iii) Statistical methods
- (iv) Minimum distances between varieties
- (v) Final discussions on draft Test Guidelines:
 - Bent (Revision)
 - Ryegrass (Revision)
 - Kentucky Bluegrass (Revision)
 - Safflower
- (vi) Definition and examination of hybrid varieties

(vii) Discussion of working papers on Test Guidelines for:

- Maize (Revision) (FR to prepare a working paper)
- Rape (Revision) (DE to prepare a working paper)

Visits

32. During the afternoons of June 13 and 14, the Working Party visited the trial grounds of the plant testing station at Crossnacreevy. In the afternoon of June 14 it also saw demonstrations there on color measurements, on chlorophyll fluorescence measurements, on electrophoresis and on databases. In the afternoon of June 15, it saw demonstrations of the Biometric Computer Facilities at the Biometrics Division of the Department of Agriculture for Northern Ireland at Newforge Lane, Belfast, and heard a lecture on statistical methods for DUS testing (see paragraph 15 above).

33. This report has been adopted by correspondence.

[Annex follows]

ANNEX

LIST OF PARTICIPANTS AT THE EIGHTEENTH SESSION
OF THE TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS
BELFAST, UNITED KINGDOM, JUNE 13 TO 16, 1989

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