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UPOV

TWO/XV/12
ORIGINAL: English
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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL WORKING PARTY FOR ORNAMENTAL PLANTS AND FOREST TREES

Fifteenth Session
Cambridge, United Kingdom, October 5 to 7, 1982

DRAFT REPORT

prepared by the Office of the Union

Opening of the Session

1. The fifteenth session of the Technical Working Party for Ornamental Plants and Forest Trees (hereinafter referred to as "the Working Party") was held at Cambridge, United Kingdom, from October 5 to 7, 1982. The list of participants appears in Annex I to this report.

2. Mr. F.H. Goodwin, Controller of the Plant Variety Rights Office, and Dr. G.M. Milbourn, Director of the National Institute of Agricultural Botany (NIAB), welcomed the participants to the NIAB at Cambridge. The session was opened by Mrs. U. Löscher, Chairman of the Working Party.

Adoption of the Agenda

3. The Working Party unanimously adopted the agenda of the fifteenth session as reproduced in document TWO/XV/1.

Adoption of the Report of the Fourteenth Session

4. The Working Party unanimously adopted the report of the fourteenth session as reproduced in document TW/46.

Report on the Seventeenth Session of the Technical Committee

5. Dr. M.-H. Thiele-Wittig gave a short account of the last session of the Technical Committee, the report of which is reproduced in document TC/XVII/5, restricting himself to the main subjects discussed.

6. In connection with the discussions of the report on the last session of the Technical Committee, the Working Party discussed several of the items mentioned in that report.

UPOV Color Chart

7. The Working Party discussed the need for a new color chart as the RHS Colour Chart was no longer available and there was no intention to reprint it. The Working Party finally supported a proposal made by the experts from the Federal Republic of Germany to study in a pilot project the establishing of a UPOV Color Chart. The pilot project would be handled by the experts from the Federal Republic of Germany and would basically consist of selecting one basic color (red) and preparing all different shades of red towards black, towards white and towards grey. Once those different shades had been prepared, a reduced number of copies would be prepared for discussion in a Subgroup on Color. That Subgroup, would have to decide how many steps would be necessary from the basic color to black, white or grey and also whether the envisaged principle for the establishing of a UPOV Color Chart was the best or whether a different principle should be applied. The Working Party noted, however, that the pilot project could only be carried out if it was financed from the UPOV budget.

Denomination of Varieties

8. The Chairman reported that at the last Congress of the International Society for Horticultural Science (ISHS) in Hamburg it had been decided to establish a workshop on nomenclature issues in which she was a member, together with Mr. Brander from Denmark and Mr. Brandenburg from the Netherlands. Thus, through herself and Mr. Brander there was a link between the ISHS and UPOV and this might in future favor closer cooperation between UPOV and the ISHS.

9. In order to explain to the member of ISHS the situation with respect to variety denominations and how they were handled within UPOV, Mr. Schneider (Netherlands) was to prepare a short article for publication in Chronica Horticulturae, the organ of the ISHS. Mr. Schneider was to circulate the draft of the article to some of the members of the Working Party before publication.

Stabilization of Latin Names

10. Mr. Schneider (Netherlands) reported that he had asked the Executive Committee and the Nomenclature Committee of the International Seed Testing Association (ISTA) whether ISTA could not also start stabilizing Latin names of other species in which UPOV would be interested but which were not propagated by seeds. Mr. Schneider reported that ISTA had agreed in principle to the idea of stabilizing these species but they would prefer to receive a formal request from the UPOV Office. It would also have to be decided how far UPOV would have to finance the additional work that was to be done by ISTA.

Lists of Classes for Variety Denominations

11. The Working Party, having discussed the envisaged revision of the lists of classes for variety denominations by the Technical Committee, proposed to the Technical Committee that it make two further exceptions to the general principle of one genus forming one class by accepting the following two classes: Erica and Calluna as one class and all orchiedacae as another class. With the exception of that proposal, the Working Party favored the general approach of one genus forming one class and proposed to make as few exceptions as nec- essary to that basic principle.

Contacts with the Professional Organizations

12. As the professional organizations claimed a lack of information on the part of UPOV, various possibilities for improving information were discussed. Finally it was admitted, however, that it was not possible to produce a more detailed report of the discussions and to distribute reports of the sessions of the Working Party to the professional organizations. It was also not recommended that each time comments from the professional organizations were

discussed by the Working Party, the Office of UPOV should subsequently inform the professional organizations in detail of the results of these discussions as, unfortunately, in the majority of the cases, the proposals or comments so far had had to be rejected. The Office of UPOV would, however, from time to time inform the professional organizations in separate letters if a lot of comment of the same nature were received which had no likelihood of being adopted by the Working Party since they were contrary to UPOV principles.

Reports of Experts on Progress Made with Plant Breeders' Rights in Ornamental Plants and Forest Trees

13. The experts introduced written statements circulated by several of them giving information on the progress made during the last year. However, in view of the general exchange of national lists of varieties under test between the UPOV member States it was felt that in future this exchange of lists of ornamental varieties would no longer be necessary and therefore in future that agenda item could be dropped. If a member State wished to report on any important national events that could always be done under "Any other business."

14. In connection with the reports of the experts on the progress made in their States, the expert from Israel reported that they had encountered some difficulty when taking over test reports made in another member State in so far as the expressions of certain characteristics (especially with respect to colors) were different in his country compared to those of the country from which the test reports were obtained. Therefore, Israel had to complete this test report by own test results, especially with respect to colors which were different under the climatic conditions prevailing in Israel.

The Implications of Tissue Culture on the Testing of Distinctness, Homogeneity and Stability

15. Mr. D. Pennell (United Kingdom) reported on the implications of plant tissue culture for distinction, uniformity and stability testing. The report is reproduced in Annex II to this report.

Final Discussion on Draft Test Guidelines for Carnation (Revision)

16. The Working Party continued discussing the working paper on Test Guidelines for Carnation on the basis of document TWO/XV/9 and made the following main changes to that document:

(i) Changes made in the Technical Notes:

Technical Note

4 the last sentence to read: "It is recommended that the competent authorities use the classification groups as given in Annex 1 for the grouping of varieties."

6 to have the words "a second" replaced by "additional"

7 to have the following sentence included before the last sentence: "The description should always start with the information on the flower color group and on the cultural type as indicated in Annex 1."

9 to read: "All observations determined by measurement, weighing or counting (the true quantitative characteristics) should be made on typical organs of at least 10 plants at the start of full flowering."

10 to have the last sentence removed from this paragraph and placed at the end of paragraph 11

(ii) Changes made in the Table of Characteristics:

Characteristics

16, 17, 25, 27, 37 to receive an asterisk

19, 47 to have the asterisk deleted

21, 26, 28 to receive a plus (+)

2 to have the word "visible" deleted

4 to have the reference to characteristic 7 replaced by a reference to characteristic 2

21 to receive drawings for explanation

23 to have the last state read: "short acuminate"

24 to 28 to have the characteristics of the apicalix placed before those of the calix

25, 27 to have the order of the states inverted

26, 28 to have the words "extension of" deleted

38, 40 to have the words "of blade" added

38 to have the order of the states changed as follows: "picotee, edged, striated, speckled, picotee-striated, picotee-speckled, edged-striated, edged-speckled, picotee-striated-speckled, edged-striated-speckled, striated-speckled, shading-off, flushed"

16, 17, 33 to have the drawings amended

(iii) In Annex 1 in the cultural type there would be only two types namely "one flower per stem" and "spray".

(iv) Further proposals for example varieties to the list of example varieties distributed during the session will have to be sent to the experts from the Netherlands before the end of the year. After the inclusion of these example varieties, the Test Guidelines can be sent to the professional organizations for comments.

Test Guidelines for Narcissi

17. The Working Party rediscussed the establishing of Test Guidelines for Narcissi on the basis of a working paper dated 1981-11-24 together with the comments reproduced in document TWO/XV/2. It agreed to all changes mentioned in document TWO/XV/2 with the exception of those for characteristic 32, 37, 44, the second proposal for 49, 51, 56 and 62. In addition it made the following main changes to the working paper dated 1981-11-24:

(i) In paragraph 5 of the Technical Notes, the last sentence would be deleted. The Working Party asked however that paragraph 5, comprising the last-mentioned sentence, should be submitted to the Technical Committee for advice on whether the wording should be included in the draft Test Guidelines for Narcissi and whether comparable sentences should also be included in other Test Guidelines. In the event of a comparable sentence being included, the words "primary off-type" and "secondary off-type" would require clearer definition, especially as to whether a secondary off-type would mean an off-type occurring later during the testing or whether it would mean an off-type of minor importance, concerning only part of the plant or part of the characteristic.

(ii) Changes made in the Table of Characteristics:

Characteristics

11 to have the contents of the bracket supplemented by the words "where applicable" and to have the first state changed from "flat" to "straight"

32 to read: "Periant segment: configuration"

37 to read: "Periant segment: surface"

42 to have the fifth state changed from "conical" to "obconical"

51 to be split into two characteristics, the first reading: "Corona: lobes" with the states "absent, present" and the second reading: "Corona: type of margin" with the states "entire, crenate, thrilled, double-thrilled"

59 to read: "Anthers: curling" with the states "absent, present"

70 to receive a drawing for explanation and to have the state "sulcate" replaced by "grooved"

57, 58, 61 to have the spelling of the example variety "Winifred van Graven" corrected

(iii) The experts from the United Kingdom will prepare drawings for characteristic 70 and mark for each of the example varieties the division to which it belongs as indicated in Annex 1. Thereafter the document will be sent to the professional organizations for comments.

Test Guidelines for African Violet

18. The Working Party started discussing the working paper on Test Guidelines for African Violet (revision) as reproduced in document TWO/XV/3 and made the following main changes in that document:

(i) Changes made in the Table of Characteristics:

Characteristics

4 to read: "Plant: number of inflorescences"

7 to read: "Major leaf: length of blade"

9 to have the states "broad-elliptic, circular, ovate, broad-ovate"

13, 23, 43 to have the additional state "very strong"

14 to have the word "coloring" replaced by "color"

15, 16 to have the words "shape of" deleted

15 to have the first state replaced from "flat" to "straight"

16 to have the states "straight, incurved"

17 to have the states "narrow acute, broad acute, obtuse"

18 to have the wording of the states checked by the experts from the Federal Republic of Germany in comparison with comparable wording in the Test Guidelines for Vine

21 to have the word "indentation" replaced by "incisions"

29 to have the word "half-erect" replaced by "semi-erect"

34 to be placed after characteristic 27

37 to have the states "violet-like (cygomorphic), star-shaped (actynomorphic)"

41 to have the word "basis" replaced by "base"

42 to have the word "the" deleted

43 to read: "Petal: ondulation"

44 to receive an asterisk, and to have the word "stamen" replaced by "stamens"

45 to read: "discoloration of flower after maturity"

(ii) The Technical Notes and the growing conditions would have to be translated into English and French and circulated to the members of the Working Party for approval, thereafter the document would be presented to the professional organizations for comments.

Test Guidelines for Chrysanthemum (revision)

19. The Working Party noted document TWO/XV/8 giving a list of characteristics from the UPOV Test Guidelines for Chrysanthemum, considered unreliable or unnecessary, and a list of characteristics used by the authorities of the United Kingdom in addition to the characteristics contained in the UPOV Test Guidelines for Chrysanthemum. The Working Party agreed that the experts from the United Kingdom would prepare a working paper on revised Test Guidelines for Chrysanthemum, deleting those characteristics as proposed in the abovementioned document as well as including additional characteristics as proposed in the same document, with the exception of the characteristic on the apical dominance of the plant when vegetative and the compounding of the inflorescence of spray varieties. In addition, the color group of the flower head would be placed in a special annex. The working paper would be circulated for comments which should be sent to the Chairman before June 1, 1983.

Test Guidelines for Anthurium

20. The Working Party started discussing a working paper on Test Guidelines for Anthurium dated October 1981 and made the following main changes to that document:

(i) Changes made in the Table of Characteristics:

Characteristics

4 to have the Notes 3, 5, 7

5, 17 to have the states "free, touching, overlapping, adpressed"

6, 28, 37 to have the states "narrow (3), medium (5), broad (7)"

7, 20 to read: "Leaf blade: tip" with the states "narrow-acute, acute, broad-acute, narrow-acuminate, acuminate, broad-acuminate"

23 to read: "Spath: color contrast of veins on lower side"

32 to have the words: "in the center" replaced by "at the middle"

34 to have the word "tapering" replaced by "taper"

35, 36 to have the state "other color" deleted

(ii) The experts from the Netherlands would prepare a list of example varieties as well as the indication of the growing conditions which would be circulated to the members of the Working Party for comments to be sent in by the end of January 1983, thereafter the document would be sent to the professional organizations for comments.

Test Guidelines for Crab Apple

21. The Working Party discussed the procedure for establishing Test Guidelines for Crab Apple and finally agreed that, as proposed by the Technical Committee, no separate document for Ornamental Apples would be established but that the draft Test Guidelines for Apple as established by the Technical Working Party for Fruit Crops would be taken as a basis and that the experts from the United Kingdom would prepare a list of characteristics to be amended in that document, a list of further characteristics to be included as well as an indication whether an asterisk in the present document should not apply to ornamental apple varieties and, finally, which of the additional characteristics should receive an asterisk. As in the Technical Working Party for Fruit Crops, experts from the United Kingdom would prepare a comparative list of characteristics for rootstock varieties of apples, the experts would contact each other in order to establish these additional characteristics and amendments. The results of the discussion would then be circulated to the members of the Working Party.

Distinctness, Homogeneity and Stability in Species Containing both Vegetatively Propagated Varieties and Varieties Produced by Seed

22. The Chairman introduced document TWO/XV/6 on distinctness, homogeneity and stability in species containing both vegetatively propagated varieties and varieties produced by seed. As a result of the discussions, the Working Party confirmed that the same homogeneity requirements had to be applied to both groups of varieties. As the expression of certain characteristics of one and the same variety could differ depending on the propagation method, all comparisons when testing for distinctness would have to be made on vegetatively propagated plant material, even if the variety was normally reproduced by seed. By this procedure any differences resulting from cyclophysis would be eliminated. In addition, it had to be ensured that the same propagation method was applied within the vegetative propagation (leaf cuttings, head cuttings) to avoid the influence of topophysis and that the method used was always stated. There was, however, a difference of opinion as to whether the expression of the characteristics under normal growth would have to be added in the description of a variety which had been obtained under special conditions.

Off-Type Limits

23. The discussions were based on document TWO/XV/7 which had to be supplemented and corrected as now reproduced in Annex III to this report. The Working Party agreed that tolerances for the different types of off-types should be stated in the Technical Notes to the Test Guidelines for each species. Priority should be given to the inclusion of that information in the Test Guidelines for the species for which testing was done by one member State for all or most of the other member States. Where appropriate, the way in which the different kinds of off-types could be recognized might also be given.

Test Guidelines for Ornamental Trees

24. The Working Party agreed that the work started on Test Guidelines for Willow and for Norway Spruce in the Technical Working Party for Forest Trees would have to be integrated into the normal program of the Working Party and that a Subgroup should meet on the occasion of the seventeenth session of the Working Party planned to take place 1984 at Hanover (Federal Republic of Germany). In the meantime the forest expert from the Federal Republic of Germany would try to collect more information on these two species, especially with respect to example varieties, by means of correspondence from the other member States.

Stages of Test Guidelines

25. The Working Party agreed that the drafts for Test Guidelines for Carnation (revision), for African Violet (revision), for Anthurium and for Narcissi should be sent to the professional organizations for comments after the information that was still missing had been included, which was to be expected by the end of the year or the end of January.

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[Annex II follows]

ANNEX II

THE IMPLICATIONS OF PLANT TISSUE CULTURE FOR DISTINCTION, UNIFORMITY AND STABILITY TESTING

D Pennell ADAS, Brogdale EHS, Faversham, Kent.

Over the last 40 years (1940 - 1980) extensive use has been made of 'in vitro' culture techniques within the field of plant science. Workers have found these techniques valuable in the investigation of many fundamental and applied problems in research. More recently 'in vitro' techniques have been used for the propagation of an increasingly large range of crop plants.

The propagation of plants 'in vitro' developed initially from work aimed at eliminating viruses by meristem culture. This work on dahlia (Morel and Martin 1952) and orchid (Morel 1960) stimulated the commercial exploitation of the work for vegetative propagation especially of orchids. No doubt the successful adoption of 'in vitro' techniques by orchid growers was helped by their familiarity with the non-symbiotic germination of orchids seeds developed by Knudson (1921, 1946). At the time it was considered that by using tissue culture techniques the cost of orchid plants would be drastically reduced. Whether or not this in fact occurred is debatable.

Following the work on orchid propagation the commercialisation of techniques for the vegetative propagation of large numbers of pot plants, especially foliage plants, took place during the 1970's (Kenny et. al 1981). During the late 1970's and 1980's there has been increasing commercial interest in propagating a wide range of plants by similar means.

Plant tissue culture techniques can be developed into efficient propagation system for many crops with the following advantages:

ADVANTAGES:

1. Rapid clonal propagation - very large numbers of plants can be produced in a year. It is however doubtful whether the rates calculated from research papers can be achieved in commercial practice. This can be useful in producing large numbers of plants difficult to propagate in other ways.

2. New cultivars or other new introductions can be quickly brought into commerce as large populations can be produced from one individual. This could mean that it will not be worthwhile to register some minor crops for plant breeders rights. Sufficient plants can be released to satisfy the market and recoup costs over, say, the first 5 years before competitors have sufficient material to sell. For other crops sold in relatively low volume registration may prove to be more attractive in order to recoup costs over a longer period.

3. Pathogen tested plant material can be quickly propagated and released in the same way as new cultivars.

4. Production of young plants can be accurately programmed using tissue culture techniques with production targets and deadlines defined.

5. Considerable space saving can be achieved both in stock plant area and in propagating area as in the region of 2000 plantlets can be accommodated per m^2 of growth room shelving.

6. The use of cultures can help in the exchange of plant material between countries.

7. Storage; tissue cultures can be stored under cold conditions for relatively long periods. Strawberries for example were successfully stored for 6 years at 4°C. Such storage can help in production of plants. The use of cytopreservation techniques is unlikely to offer any advantages commercially principally due to high capital costs of equipment.

DISADVANTAGES:

1. Difficulties in matching new technology to existing production and capacity.

2. The establishment of large numbers of plantlets in compost after propagation can present handling problems.

3. Stability in culture and the creation of variability have been major fears. Generally it appears that tissue culture systems avoiding callus give rise to variants at a similar level as would be found in conventionally propagated progeny. Most evidence of spontaneous variation is found when callus systems, much beloved by research workers, have been used. For clonal propagation systems utilising shoot tips, meristem or plant organs as initial explants are preferable.

   The plant breeder can use plant tissue cultures in order to create variability. Cultures can be manipulated with relative ease with chemical mutagens incorporated in the media. Exposure to irradiation can also be easily carried out. (Broertjes and Van Harten 1978) For some crops sufficient variation can be obtained by generating callus and removing shoots which are subsequently induced to develop. Thus the use of mutagenic agents is avoided. There is much information of variants induced in this way but none are the long term stability of the clones produced.

4. Economic considerations - many are frightened by the high capital cost which can be increased when investing in a laboratory for commercial production. Generally many first generation commercial laboratories were over capitalised luxurious copies of research laboratories. The cost of producing initial plantlets vary with crop but for many do not differ significantly from conventional propagation.

APPROXIMATE RELATIVE COSTS

CROP	TISSUE CULTURED	CONVENTIONAL METHOD
Strawberry	6 - 10p	3 - 7p
V T Potato	15p	100p
Rhododendron	15 - 20p	20 - 30p
Top Fruit rootstock	20 - 25p	15 - 20p
Roses	7p	?

5. Unfamilar Techniques - too many involved in commercial horticulture there is some mystique attached to tissue culture which prejudices many against considering it as a commercial technique.

COMMERCIAL PRODUCTION BY TISSUE CULTURE

Commercially large numbers of pot plants are produced by tissue culture techniques as a standard means of propagation. Considerable interest is currently being expressed by producers of hardy nursery stock in tissue culture propagation.

Some crops are being propagated commercially be tissue culture for the early stages of virus tested stock production, potato being a major example.

There are, however, some crops currently produced from seed which may be propagated clonally via tissue culture economically. This becomes more probable as the cost of F1 hybrid seed rises.

For yet other crops, such as cauliflower, the uses of tissue culture will be confined to the benefits it gives in breeding and selection work.

CROPS PROPAGATED BY TISSUE CULTURE TECHNIQUES

Pot Plants:

Ficus
Caladium
Salpiglossis
Monstera
Dracaena
Cordyline
Philsdendron
Dieffenbachia
Scindapsus
Syngonium
Anthurium
Peperomia
Kalanchoe
Saintpaulia
Cyclamen
Primula
Poinsettia
Streptocarpus
Gloxinia
Fuchsia
Begonia
Episcia

Cacti Bromeliads Ferns Carnivorous plants

HARDY NURSERY STOCK:

Acer platanoides; Acer sp.
Alnus incana
Aspen
Azalea (see also rhododendron)
Betula pendula
Buddleia davidii
Camellia
Clematis
Cornus canadensis
Cupressus arizonica
Crataegus toba
Cryptomeria japonica
Daphne odora, D Burkwoodii
Delphinium
Laburnum
Liriodendron tulipifera
Liquidamber styraciflua
Magnolia
Malus
Phlox
Paulownia tomentosa
Pinus ponderosa
Pinus taeda
Poplar
Potentilla fruticosa
Prunus spp.
Pseudotsuga meniesii
Rhododendron

HARDY NURSERY STOCK CONT'D

Embothrium coccineum
Eucalyptus species
Forsythia
Garrya elliptica
Hamamelis
Hosta species
Hydrangea
Hypericum
Ilex
Kalmia
Rose
Salix
Schizophragma
Skimmia
Spiraea
Tectona grandis
Thuja plicata
Tsuga heterophylla
Viburnum
Weigela

FRUIT:

Apple
Pear
Cherry
Plum
Hops
Strawberry
Raspberry
Blackberry
Grapes

BULBS:

Narcissus
Freesia
Iris
Gladiolus
Nerine
Tulip
Hyacinth

FLOWERS:

Carnation
Chrysanthemum
Roses
Gerbera
Orchids

VEGETABLES:

Potato
Asparagus
Cauliflower
Brussels sprouts
Tomato
Chicory
Cucumber
Onion

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[Annex III follows]

ANNEX III

ACCEPTABLE MAXIMUM NUMBER OF DIFFERENT TYPES OF NON-UNIFORMITY IN SAMPLES SUBMITTED FOR THE TESTING OF DISTINCTNESS, HOMOGENEITY AND STABILITY

Species	State	Type of material to be sent in	Number of individuals to be sent in	Acceptable maximum number of: plants failing to satisfy health requirements	admixtures (not directly related in a genealogical way)	primary off-types (caused by insufficient selection)	secondary off-types (caused by newly appearing mutations)	total of primary and secondary off-types
African Violet								
	DE:	Young plants	20					1
	NL:	see D						
Alstroemeria								
	NL:	Plants of commercial standard	4	0	0	0	1	1
Anthurium andraeanum								
	NL:	Young plants of commercial standard	6	0	1	1	1	1
Anthurium scherzerianum								
	NL:	Young plants of commercial standard	10	0	1	1	1	1
Berberis								
	UK:	Plants 2-4 years old	2	0	0	0	0	0
Carnation								
	IL:	Rooted cuttings	50	4	3	1	1	2
	NL:	Non-rooted cuttings	60	9	2	2	2	2
	FR:	Rooted cuttings	50		0	2	2	2
Chrysanthemum								
	NL:	see UK						
	UK:	AYR: Rooted cuttings	50	0*	3	1	**	
	UK:	Natural season: rooted cuttings	25	0	3	1	**	
Crab Apple								
	UK:	Trees 2-4 years old	2	0	0	0	0	0

Species	State	Type of material to be sent in	Number of individuals to be sent in	Acceptable maximum number of: plants failing to satisfy health requirements	admixtures (not directly related in a genealogical way)	primary off-types (caused by insufficient selection)	secondary off-types (caused by newly appearing mutations)	total of primary and secondary off-types
Dahlia								
	DE:	Tubers	6					1
	NL:	see UK						
	UK:	Young plants: disbudded varieties	4	Few applications, no standard established				
	UK:	Young plants: bedding varieties	10	Few applications, no standard established				
Elatior Begonia								
	DE:	Young plants	24					1
	NL:	see D						
Erica								
	DE:	Young plants	36					2
	UK:	Plants 2-4 years old	12	Few applications, no standard established				
Euphorbia fulgens								
	NL:	Rooted cuttings	10					
Euphorbia milii								
	DE:	Young plants	10					1
Forsythia								
	UK:	Protection offered, no applications						
Freesia								
	NL:	Corms of minimal export standard or larger	40	2	2	1	1	1
Gerbera								
	NL:	Young plants of commerical standard	12	0	2	1	1	1
Gladiolus								
	IL:	Corms of flowering size	50	5	3	1	1	2
	NL:	Corms of minimal export standard or larger	30	0	2	1	1	1

Species	State	Type of material to be sent in	Number of individuals to be sent in	Acceptable maximum number of: plants failing to satisfy health requirements	admixtures (not directly related in a genealogical way)	primary off-types (caused by insufficient selection)	secondary off-types (caused by newly appearing mutations)	total of primary and secondary off-types
Heather								
	DE:	1-year-old plants	20					1
	UK:	Plants 2-4 years old	12	Few applications, no standard established				
Hydrangea								
Iris								
	NL:	Bulbs of minimal export standard or larger	30	0	2	1	1	1
Juniper								
	UK:	Trees 2-5 years old	4	Few applications, no standard established				
Kalanchoe								
	DE:	Young plants	20					1
	NL:	see D						
Lachenalia								
	ZA:	Bulbs	30	According to Chapter III of TG/1/2				
Lily								
	IL:	Bulbs of flowering size	12	1	0	0	0	0
	NL:	Bulbs	35	3	2	1	1	1
	UK:	Bulbs of flowering size	10	Few applications, no standard established				
Narcissi								
	IL:	Bulbs of flowering size	50	5	3	1	1	2
	NL:	Bulbs of flowering size	30	0	2	1	1	1
	UK:	Bulbs of flowering size	10	Few applications, no standard established				
Orchids								
	NL:	Flowering plants or plants of flowering size	2	0	0	0	0	0
Ornithogalum								
	ZA:	Bulbs	20	According to Chapter III of TG/1/2				

Species	State	Type of material to be sent in	Number of individuals to be sent in	Acceptable maximum number of: plants failing to satisfy health requirements	admixtures (not directly related in a genealogical way)	primary off-types (caused by insufficient selection)	secondary off-types (caused by newly appearing mutations)	total of primary and secondary off-types
Pelargonium								
	DE:	Young plants	15					1
	UK:	Rooted cuttings	10	Few applications, no standard established				
Poinsettia								
	NL:	Rooted cuttings	10					
Rhododendron								
	DE:	Plants with 3 flower buds	6					1
	NL:	see D						
	UK:	Plants with 3 flower buds	3	0	0	0	0	0
Rhododendron (pot azalea)								
	DE:	Young plants	15					1
Rose								
	DE:	1-year-old grafts	6					1
	NL:	1-year-old grafts	10	0	2	1	1	1
	NZ:	1-year-old grafts (except climbers)	6	1	0	0	0	0
	NZ:	1-year-old grafts: climbers	2	1	0	0	0	0
	UK:	1-year-old grafts: bush	6	no fixed standard	0	0	0	0
	UK:	1-year-old grafts: climber	2	no fixed standard	0	0	0	0
	FR:	1-year-old grafts: bush	6	0	1	0	1	1
	FR:	1-year-old grafts: climber	3	0	0	0	0	0
Streptocarpus								
	NL:	Adult plants of commercial standard	5	0	0	0	0	0
Tulip								
	NL:	Bulbs of minimal export standard or larger	30	0	2	1	1	1

Species	State	Type of material to be sent in	Number of individuals to be sent in	Acceptable maximum number of: plants failing to satisfy health requirements	admixtures (not directly related in a genealogical way)	primary off-types (caused by insufficient selection)	secondary off-types (caused by newly appearing mutations)	total of primary and secondary off-types
Vriesea								
	DE:	Young plants	10					1
	NL:	Young plants, at least 1 year old	100					
White Cedar								
	UK:	Protection offered, no applications						
	NL:	Plants of normal commercial standard	8					

* health requirements apply to Puccinia horiana and Liriomyza trifolii. No fixed standard for other pathogens
** secondary off-types -
(a) Limit 1. for early mutations - i.e. affecting whole flower heads or sectors
(b) Limit 2. for late mutations - i.e. affecting individual florets
total primary plus secondary - 2

[End of document]