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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

**TECHNICAL WORKING PARTY
FOR
ORNAMENTAL PLANTS AND FOREST TREES**

**Thirtieth Session
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**REVISED SUMMARY OF REPLIES TO CIRCULAR U 2572 ON THE USE OF
RESISTANCE CHARACTERISTICS**

Document prepared by the Office of the Union

By October 31, 1997, the Office of UPOV has received replies to a questionnaire on the use of resistance characteristics for distinctness purposes issued under Circular U 2572 from 25 countries and from two organizations. The answers from the organizations refer mainly to how they would prefer resistance to be tested in the future. The answers are summarized as follows:

SUMMARY OF REPLIES BROKEN DOWN BY COUNTRY AND FOR CERTAIN GROUPS OF SPECIES

Country/group of species	Q1 used on routine basis	Q2 really necessary	Q3 the only distinguishing characteristic	Q4 well defined methods exist	Q5 identified pathotype/ isolate	Q6 costs included in normal fees	Q7 test done by own institute	Q8 uniform policy (U) adapted to species (A)
	(Y/N)	(Y/N)	(number of cases in past)	(Y/N)	(Y/N)	(Y/N)	(Y/N)	
Argentina	in a few cases	Y	depends on species	some	some	-	N	U
Australia	in a few cases	for some species	9	mostly	mostly	N	partly	A
Austria	in a few cases	Y	1 (4%)	Y	Y	Y	Y	A
Bolivia	in a few cases	Y	-	some	Y	N	N	U
Czech Republic	N	useful info.	0	should be	should be	planned routinely Y	partly	U
Denmark	N	useful info.	0	1 disease	1 disease	N	partly	A
Finland	N	useful info.	0	-	-	-	-	-
France	in many cases	for some species	-	mostly	mostly	depends on species	partly	A
France Apple Varieties	N	useful info.	0	mostly	only in case of SCAB	non-routine tests N	Y	A
France Peach, Plum and Rootstocks	N	useful info.	0	-	-	-	-	-
Germany	in a few cases	some vegetables	30 vegetable varieties	Y	Y	routine tests Y	N	A
Greece	N	-	-	-	-	-	-	-
Hungary Vegetable Species	in a few cases	Y	2	mostly (in new or revised TGs)	mostly (in new or revised TGs)	depends on species	N	-
Israel	in a few cases	Y	0	mostly	mostly	routine tests Y	partly	A
Italy	in a few cases	useful info.	0	mostly	mostly	Y	Y	U
Japan	N	useful info.	4 (0.08%)	in few cases	in few cases	Y	-	A
Netherlands, Agricultural Species	N	for GMO varieties only	1	depends on species	depends on species	routine tests Y	depends on species	A
Netherlands, Fruit Species	not applicable							
Netherlands, Ornamental Species	N	N	0	N	N	future N	not applicable	depends on situation

Country/group of species	Q1 used on routine basis	Q2 really necessary	Q3 the only distinguishing characteristic	Q4 well defined methods exist	Q5 identified pathotype/ isolate	Q6 costs included in normal fees	Q7 test done by own institute	Q8 uniform policy (U) adapted to species (A)
	(Y/N)	(Y/N)	(number of cases in past)	(Y/N)	(Y/N)	(Y/N)	(Y/N)	
Netherlands Vegetable Species, National List	in many cases	Y	-	Y	mostly	Y	N	A
Netherlands Vegetable Species, CPRO	in many cases	Y	15%	Y	mostly	routine tests Y	partly	A
New Zealand	N	depends on applicant's claims	0	few		N	N	A
Poland	N	useful info.	0	N	N	N	N	A
Portugal	N	Y	0	some	in very few cases	non-routine tests N	in some cases	A
South Africa	N	useful info.	16	some	Y	N	N	U
Spain Fruit Species	N	useful info.	0	-	-	routine tests Y	-	U
Spain General	in many cases	depends on case	same species 20 - 40%	mostly	periodically	Y	partly	case by case
Sweden	N	useful info.	0	N	-	N	N	-
Ukraine	in a few cases	useful info.	-	for certain species	in certain species	N	partly	A
United Kingdom Fruit Species	N	useful info.	0	N	N	N	-	A
United Kingdom General	in a few cases	Y	5 (0.1%)	Y	Y	routine tests Y non-routine tests N	partly	A
United States of America	in many cases	Y	456 (14%)	mostly	mostly	N	-	-
Uruguay	N	for certain species	-	-	-	-	-	A

Organizations/ group of species	Q1 used on routine basis	Q2 really necessary	Q3 the only distinguishing characteristic	Q4 well defined methods exist	Q5 identified pathotype/ isolate	Q6 costs included in normal fees	Q7 test done by own institute	Q8 uniform policy (U) adapted to species (A)
	(Y/N)	(Y/N)	(number of cases in past)	(Y/N)	(Y/N)	(Y/N)	(Y/N)	
ASSINSEL								
Agricultural Species	in a few cases	only when conventional char. are not available or for GMO varieties	0	-	-	-	-	uniform policy adapted to species
Horticultural Species	in many cases	N	sometimes used for grouping	mostly	mostly	depends on country but if done by same insti- tute it should be included	depends on country but breeder's results, under supervision of office, should also be considered	uniform policy adapted to species
COMASSO								
Agricultural Species	N	useful info. (GMO necessary)	0	N	N	-	-	A
Vegetable Species	in many cases	Y	100% (used for grouping)	Y	mostly	Y	Y	A

OTHER REMARKS, PROPOSALS (ITEM 9)

Hungary (vegetable species)

Resistance characteristics should be used as specified in the vegetable guidelines. Adding an asterisk should be thoroughly considered. Resistance tests could not be substituted by electrophoresis because of lower costs and more confidence of the resistance test results.

Japan

If a description for a candidate variety includes resistance characteristics for distinctness purposes, the authority examines the said variety as follows:

- the authority tests by itself or
- an examiner requires the applicant to submit the data on the resistance and inspects on the site of breeders.

Netherlands (agricultural species)

Use disease characteristics with care. Do not use them if not necessary because:

- the testing is expensive;
- uniformity of a disease resistance may be of a disadvantage in the practical use of varieties.

If a disease characteristic is not necessary for DUS, it should not be reported in the official variety description.

Netherlands (vegetables, CPRO)

Resistance characteristics for DUS should fulfill the same standards for decision as other characters (see decision by Technical Committee in 1994). CPRO supports the TC view.

New Zealand

- (a) Claims of resistance must be species or pathotype specific.
- (b) It should be clear whether the claim is for resistance, susceptibility or tolerance.

South Africa

Disease resistance is only used in exceptional circumstances where no other distinguishing characteristics can be found. These tests are very expensive and the Department does not have the facilities to conduct them. The Agricultural Research Council who has the necessary laboratories conducts these tests on a contract basis for the Department and the applicant has to pay for the tests.

Problems are experienced where approved varieties are taken up in certification schemes. Field inspections are difficult as the inspector in the field cannot distinguish between varieties when inspections for genetic quality are carried out.

Spain

In each case to consider:

1. Taxonomic importance of the resistance;
2. Economical importance of the disease for each country
3. Reliability of testing method and reproducibility of the results in different laboratories;
4. Reliability of the method for identification and conservation of the different pathogen races;
5. Cost of items 3 and 4.

Only in case the five points are positive, they must have the asterisk.

United States

It is a standard procedure in the US system to ask for disease resistance information in Ex. C. - objective description of variety. They often use it as character in distinction search; use varies from 100 % in some species/crops to 0 % in others.

DETAILED INFORMATION BROKEN DOWN FOR CERTAIN SPECIES AND DISEASES (ITEM 10)

Country: Austria

Species and pathotype	Q1	Q2	Q3	Q4	Q5	Q6	Q7
	used on routine basis (Y/N)	really necessary (Y/N)	the only distinguishing characteristic (number of cases in past)	well defined methods exist (Y/N)	identified pathotype/ isolate (Y/N)	costs included in normal fees (Y/N)	test done by own institute (Y/N)
<i>Capsicum annuum</i> (all * characteristics)	Y	N	0	Y	Y	Y	Y
<i>Lactuca sativa</i> (Bremia 38.1-38.11)	Y	Y	1	Y	Y	Y	Y
<i>Lycopersicon lycopersicum</i> (all * characteristics)	Y	N	0	Y	Y	Y	Y
<i>Phaseolus vulgaris</i> (<i>Colletotrichum lindemuthianum</i> pathotyp lambda)	Y	N	0	Y	Y	Y	Y

Country: Bolivia

Species and pathotype	Q1	Q2	Q3	Q4	Q5	Q6	Q7
	used on routine basis (Y/N)	really necessary (Y/N)	the only distinguishing characteristic (number of cases in past)	well defined methods exist (Y/N)	identified pathotype/ isolate (Y/N)	costs included in normal fees (Y/N)	test done by own institute (Y/N)
Soybeans: <i>Diaporthe phaseolorum</i> F. sp <i>marielionalis</i>	N	Y	1	Y	Y	N	N

Country: Hungary (vegetable species)

Species and pathotype	Q1	Q2	Q3	Q4	Q5	Q6	Q7
	used on routine basis (Y/N)	really necessary (Y/N)	the only distinguishing characteristic (number of cases in past)	well defined methods exist (Y/N)	identified pathotype/ isolate (Y/N)	costs included in normal fees (Y/N)	test done by own institute (Y/N)
<i>Capsicum annuum</i>	N	Y x	2	Y	Y	N	N

Country: France (Apple)

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
SCAB (<i>Ventura inaequalis</i>) (race 1)	N	N	N	Y	Y	N	Y
Mildew	N	N	N	Y	N	N	Y
Fire Blight (<i>Erwinia amylovora</i>)	N	N	N	Y	Y	N	Y

Country: Israel

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
Tomato							
<i>Fusarium</i>	Y	Y	in	Y	Y	Y	Y
<i>Verticillium</i>	Y	Y	combination	Y	Y	Y	Y
TMV	Y	Y		Y	Y	Y	Y
YLCV	Y	Y		Y	Y	Y	Y
<i>Nematodes</i>	N	Y	Y	Y	Y	N	N
Sweet pepper							
PVY	N	Y	possible	Y	Y	Y	Y
Cucumber							
Mildew	Y	Y	possible	N	N	Y	Y

Country: Italy

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
Tomato-V	Y	Y	-	Y	Y	Y	Y
Tomato - F 0, 1	Y	Y	-	Y	Y	Y	Y

Country: Portugal

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
<i>Fusarium oxysporum f. sp. melonis</i> , pathotypes 1.2 and 1.2	N	Y + ¹⁾	-	Y	Y	N	N
<i>Oidium sp.</i>	N	Y +	-	-	-	N	N
C M V	N	Y +	-	Y	-	N	N
<i>Verticillium</i> , race 0	N	Y +	-	Y	N	N	N
<i>Fusarium oxysporum f. sp. lycopersici</i> and pathotypes 0 and 1	N	Y +	-	Y	Y	N	N
<i>Fusarium oxysporum f. sp. radices lycopersici</i>	N	Y +	-	Y	-	N	Y
<i>Phytophthora infestans</i>	N	Y +	-	N	-	N	N
<i>Pseudomonas tomato</i>	N	Y +	-	Y	-	N	Y
<i>Pseudomonas solanacearum</i> , race 1	N	-	-	N	N	N	N
Tobacco mosaic virus	N	Y +	-	Y	N	N	N
Tomato Yellow Leaf Curl virus	N	Y +	-	Y	-	N	N
<i>Meloidogyne incognita</i>	N	Y +	-	Y	N	N	N

¹⁾ Only for varieties which are morphologically very similar.

Country: South Africa

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
<i>Fusarium oxysporum f. sp. melonis</i> race 1 and 2	N	Y	5	Y	Y	N	N
Papaya rinespot virus	N	Y	1	Y	Y	N	N
<i>Fusarium oxysporum f. sp. melonis</i> race 2	N	Y	10	Y	Y	N	N

Country: Ukraine

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
<i>Puccinia recondita</i> (Wheat)	Y	Y	-	Y	Y	-	N
<i>Synchytrium endobioticum</i> (Potatoe)	Y	Y	-	Y	Y	-	Y
<i>Phomopsis helianthi</i> (Sunflower)	Y	Y	-	Y	N	-	N

Country: United Kingdom

Species and pathotype	Q1 used on routine basis (Y/N)	Q2 really necessary (Y/N)	Q3 the only distinguishing characteristic (number of cases in past)	Q4 well defined methods exist (Y/N)	Q5 identified pathotype/ isolate (Y/N)	Q6 costs included in normal fees (Y/N)	Q7 test done by own institute (Y/N)
<i>Lolium spp.</i>							
<i>Puccinia coronata</i>	N	Y	2	Y	Y	N	N
<i>Gloeotinia temulenta</i>	N	Y	1	Y	N	N	Y
<i>Pisum sativum L.</i> <i>Fusurarium oxysporum f.</i> <i>sp. pisi</i>							
Race 1	Y	Y	few	Y	Y	Y	N
Race 2	N	Y*	very rare	Y	Y	N	N
Race 5	N	Y*	very rare	Y	Y	N	N
Race 6	N	Y*	very rare	Y	Y	N	Y
Powdery Mildew <i>Peronospera viciae</i>	N	Y*	very rare	Y	Y	Y	Y
<i>Brassica oleracea acephala</i> (Kale) <i>Plasmodiophera brassicae</i>	N	Y	one	Y	Y	N	Y

Country: United States of America*

* NOTE: Last two columns (Q6 and Q7) are left off - not relevant to US system.

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