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UPOV

TC/XV/3
ORIGINAL: English
DATE: February 6, 1980

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL COMMITTEE

Fifteenth Session
Geneva, March 18 and 19, 1980

THE NEED FOR THE SUBMISSION OF A FURTHER SEED SAMPLE FOR TESTING IN THE SECOND GROWING SEASON

Document prepared by the Office of the Union

1. During its fourteenth session (November 1979), the Technical Committee discussed the question whether in the second year of tests for generatively propagated varieties a further sample should be requested from the breeder. It was agreed to discuss this problem further during the fifteenth session of the Technical Committee on the basis of a working paper (see document TC/XIV/5, paragraph 17).

2. The Annexes to this document contain a working paper prepared by the Chairman of the Technical Working Party for Agricultural Crops.

[Two Annexes follow]

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

In the future, testing of distinctness, homogeneity and stability of varieties in the different member States should be directed towards a better utilization of each other's results. However, among other problems there is a need for a better technical harmonization of the testing procedures.

At the request of the Technical Committee, it is suggested that a discussion be held on one of the problems concerning "Submission of 1 or 2 samples." This paper has been worked out for that purpose.

The paper gives a summary of the decisions and variόus remarks which have been made in the past in UPOV on this specific problem in connection with distinctness, homogeneity and stability.

To simplify the remarks in cases of self-pollinated and cross-pollinated varieties, Barley and Ryegrass have been used respectively as examples.

In Annex II a summary of the testing of distinctness and homogeneity of cereals in different member States which has been worked out by the Cereals Subgroup is given for information.

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TESTING DISTINCTNESS

	1 sample	2 samples
Criteria	Two varieties have to be considered dinstinct if the difference - has been determined at least in one testing place, - is clear, and - is consistent.	
Number of testing places	a. 1 place (2 in case of risk)	a. 1 place (2 in case of risk) b. 2 places c. 3 places
Number of years of testing	a. 2 years	a. 2 years b. one year extention is possible
Assessment of data	I. Self-pollinated varieties: a. plots b. plots and ear-rows	
	II. Cross-pollinated varieties: a. spaced plants b. rows c. spaced plants and rows	
Minimum difference required between 2 varieties	I. Qualitative characteristics: A consistent difference in one characteristic greater than the fluctuation in that characteristic exhibited by either variety.	
	II. Measured quantitative characteristics:	
	The difference has to be considered clear if it occurs, for example on the basis of the method of the Least Significant Difference, with one per cent probability of error. The differences are consistent, if they occur with the same sign in two consecutive growing seasons.	The difference has to be considered clear if it occurs, for example on the basis of the method of the Least Significant Difference, with one per cent probability of error. The differences are consistent, if they occur with the same sign in two, or in two out of three, growing seasons.

0044

TESTING HOMOGENEITY

	1 sample	2 samples
Criteria	The variation shown by a variety, depending on the breeding system of that variety and off-types due to occasional mixture, mutation or other causes, must be as limited as necessary to permit accurate description and assessment of distinctness and to ensure stability.	
Number of testing places	a. 1 place	a. 1 place b. 2 places c. 3 places
Number of years of testing	I. Self-pollinated varieties:	
	a. 1 year b. 2 years	a. 1 year b. 2 years c. one year extension is possible
	II. Cross-pollinated varieties:	
	a. 1 year b. 2 years	a. 1 year b. 2 years c. one year extension is possible
Assessment of data	I. Self-pollinated varieties:	
	a. ear-rows b. ear-rows and plots	
	II. Cross-pollinated varieties:	
	a. spaced plants b. rows c. spaced plants and rows	
Minimum requirement	I. Self-pollinated varieties:	
	Maximum acceptable number of off-types in samples of various sizes as defined in the Test Guidelines.	
	II. Cross-pollinated varieties:	
	a. Visual characteristics:	
	The number of plants visually different from those of the variety should not significantly (95% confidence level) exceed the number found in comparable varieties already known.	
	b. Measured characteristics:	
	The standard deviation or variance should be used as the criterion for comparison. A variety is considered not to be homogeneous if its variance exceeds 1.6 times the average of the variance of the varieties used for comparison.	

0045

TESTING STABILITY

<table>
<tr><td></td><td colspan="2">1 sample</td><td>2 samples</td></tr>
<tr><td>Criteria</td><td colspan="3">The variety must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication at the end of each cycle.</td></tr>
<tr><td rowspan="5">I. General remarks</td><td colspan="3">When a submitted sample has been shown to be homogeneous, the material can also be considered stable.</td></tr>
<tr><td colspan="3">It is not generally possible during a period of 2 or 3 years to perform tests on stability which lead to the same certainty as the testing of distinctness and homogeneity..</td></tr>
<tr><td colspan="3">Nevertheless, it is considered that the authority should, at least, do its utmost during this short period to obtain as much information as possible on the stability of the variety being tested.</td></tr>
<tr><td colspan="3">The 1st submitted sample should be considered to constitute the definitive sample.</td></tr>
<tr><td colspan="2">Submission of 1 sample only:

a. would limit the possibility of testing stability;

b. would oblige the breeder to deliver larger quantities of seed at a stage where he had only small amounts available;

c. would make it necessary for the breeder to be sure that the quality of material sent in is sufficiently high (for example depending on weather conditions).</td><td>There might be cases where varieties fulfill the requirements for homogeneity but are nevertheless unstable.

<u>Examples</u>:

a. a variety shows a permanent shift in a certain direction which the breeder obviously is unable to stop;

b. a variety consists of several different but closely resembling lines. The breeder, in trying to improve the variety by exchanging one line for another close line, causes a shift in the variety in a certain direction.</td></tr>
<tr><td rowspan="3">II. Testing before rights can be granted.</td><td colspan="3">Stability is tested in respect of all characteristics specified for distinctness.</td></tr>
<tr><td colspan="3">If in the course of testing, facts are discovered which make it doubtful whether the variety is stable, a systematic test of stability must be undertaken.</td></tr>
<tr><td colspan="2">Additional test with extra samples would give valuable information on stability and thus might be really necessary.</td><td>Submission of seed of the 1st and the 2nd samples should originate from different generations.

When the test has proved that a mistake has been made concerning the 2nd seed submission, a 3rd sample should be requested and sown for comparison with the 1st year seed submission.</td></tr>
</table>

(continued)

TESTING STABILITY (continued)

	1 sample	2 samples
II. (Continued)		More than one sample of material is requested from the applicant, usually in different years, and comparisons of those samples are made by growing plots side by side. Comparison of the upgrowth of the seed submitted for the testing year with the upgrowth of the seed submitted in the previous year (years) or with a standard sample.
III. Testing after rights have been granted = Post-control	Stability is tested in respect of all characteristics specified for distinctness.	
	On the basis of past experience, it has been shown that for certain species active steps must be taken to test periodically whether the stability requirements are fulfilled.	
	Every 2nd or 3rd year, tests are carried out with samples of successive generations of the reproduction, which are compared with a standard sample representing the description of the variety.	
	If instability is detected only after the granting of rights, the rights must be annulled.	
IV. Priority	There has to be some assurance that the requirement of one or more samples for testing do not interfere with the determination of the priority of the variety.	
		In cases where the breeder turns in a sample which is slightly improved during the testing period, the question arises whether he could still claim the priority at the date of application for variety protection.

[Annex II follows]

ANNEX II

SUMMARY OF THE TESTING OF DISTINCTNESS OF WHEAT, BARLEY AND OATS WORKED OUT BY THE CEREALS SUBGROUPS

Winter and Spring Varieties*	D	DK	F	UK	NL	S
Number of testing places	1 (2^{x})	1 (2^{x})	2	3	1 (2^{x})	1
Number of years of testing	2	2	2	2	2	2
Number of data behind one characteristic:						
a. plot characteristic	4	4	6	6	4	4
b. laboratory characteristic	2	2	4	6	4	2
Revision of description permitted after Plant Breeders' Rights	Yes	No	Yes	Yes	No	No
Minimum difference required for distinctness between 2 varieties[xx]	Yes	Yes	Yes	Yes	Yes	Yes

x In case of risk.

xx "A consistent difference in one characteristic greater than the fluctuation in that characteristic exhibited by either variety".

Spring Varieties	D	DK	F	UK	NL	S
Year I:						
Ears submitted by breeder		200	200	500	200	150
Ears sown		100	150	300	100	120
If number of aberrant rows >		3	1(3)	3 or 6[1]	3	2(3)
- the application is rejected				x	x	
- the application is pursued with new submission		x	x			x
Seed submitted by breeder (kg)	4	5	5	5	3	1
Drilled plot population	2000	2000	2000	3 X 2000	2500	5000
If number of aberrant plants >	0.3%		0.3%	1 or 2%[2]	0.3%	0.1%
- the application is rejected				x	x	
- the application is pursued with new submission	x	x	x			x
Year II:						
Ears submitted by breeder	120	200	200			150
Ears sown	100	100	100			120
If number of aberrant rows >	3	3	1(3)			2(3)
- the application is rejected			x			
- the application is pursued with new submission	x	x				x
Ears harvested from 1st year drilled plots				450		
Ears harvested from 1st year ear-rows			48			
ears sown			48	300		
If number of aberrant rows >			1(3)	3 or 6[1]		
- the application is rejected			x	x		
Seed submitted by breeder (kg)	4	15	10	14		3
Drilled plot population	2000	2000	2000		2500[2]	5000
If number of aberrant plants >	0.3%		0.2%	1 or 2%[1]	0.3%	0.1%
- the application is rejected				x	x	
- the application is pursued with new submission	x	x	x			x

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

[2] NL: sown from 1st seed submission

[End of Annex II and of document]