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NEW HORDEIN ALLELES IN BARLEY

Document prepared by experts from the United Kingdom

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Introduction

There has been some discussion recently about the procedure for the incorporation of new hordein alleles into the Guidelines for testing barley and whether the use of two methods (SDS PAGE and acid PAGE) should be continued. This has caused some UPOV Member States to raise once again the issue of the method to be used for hordein analysis.

This paper suggests a possible future procedure for agreeing new alleles. Alternatively, all new alleles identifiable by either method should be included in the Guidelines.

Background

There seems to be very little merit in the TWA considering yet again the question of methodology for hordein analysis. This was discussed at great length in the period 1989-1992, and a detailed comparison of the two methods ((TWA/21/9) suggested that it was not really possible to identify one or other method as the 'best'. This paper also suggested for the first time that both methods could be incorporated into the Guidelines. This concept was subsequently confirmed by the TWA in 1993 (TWA/22/16(rev)) and formed the basis for the inclusion of hordein analysis into the Guidelines.

The original lists of D-, C- and B-hordein alleles were devised by French and German experts. In the case of the C- and B-hordeins, agreement was on the basis that the alleles were those which both methods identified as clearly different, and for which a description of the allele could be supplied. It was never intended that the list would be closed, or indeed exhaustive, as it was well known that there were many more C- and B-hordein alleles in existence, if a wide range of germplasm was analysed (for instance the NIAB database contains 27 C- and 34 B-hordein alleles).

New Alleles

New alleles have been added to this original list, usually following a ring test by at least three different laboratories. Difficulties only began to arise when the original principle of agreement between methods was eroded and alleles that were only distinguishable by one method were added.

It would thus seem sensible to revert to the practice of only allowing a new allele to be added if (a) it can be agreed by a ring test involving both methods that the new allele is truly different, and (b) if the allele can be described satisfactorily by both methods.

Alternative Proposal

The alternative to this is to allow the addition of alleles that have only been tested (or are only distinct) by one or other of the methods. If this is to be pursued, then the UK would like to suggest that the following alleles be added:

31 Locus Hor-1	Example variety	Note
	Klaxon	19
	Onslow	20
	Skiff	21
	Triangel	22

32 Locus Hor-2

	Emma	29
	Themis	30
	Onslow	31
	Argyle	32
	Elasona	33
	Sotokagi	34
	Plumage Archer	35

These are all alleles that have been tested by acid PAGE, derive from varieties that are or have been listed in UPOV member states and are clearly different from those included currently in the Guidelines. Descriptions can be supplied as required.

Conclusion

It would be preferable to revert to the original principle for hordein allele recognition and utilise a system for the addition of new alleles to the Guidelines only if they were tested and agreed by both of the methods (acid PAGE and SDS PAGE) that are described. If there is to be a departure from this principle, then there are several alleles that exist in varieties from UPOV member states and that have been analysed by acid PAGE that should be included in any revised Guidelines.

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