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THE USE OF MOLECULAR TECHNIQUES IN VARIETY IDENTIFICATION

Paper prepared by experts from the European Community

EUROPEAN UNION

COMMUNITY PLANT VARIETY OFFICE

THE USE OF MOLECULAR TECHNIQUES IN VARIETY IDENTIFICATION

José ELENA, Anne WEITZ
Community Plant Variety Office, P.O. Box 10121, FR-49101 Angers, France

Summary

This paper aims to elaborate on the development of a system of variety identification in relation to the enforcement of plant breeder's rights. The situation within UPOV as regards the application of molecular techniques provides the frame in which such a system can be developed. The paper raises the most important technical issues in this respect as well as legal and procedural implications.

Background

During the exchange of opinions between the CPVO and European breeders' organizations (ESA, CIOPORA), the enforcement of plant breeder's rights is an issue which has been raised on a regular basis. Breeders have frequently expressed their difficulties in exercising their rights in cases of infringement. The verification of the identity of suspicious plant material against the variety description of a protected variety entails several complications:

- The technical examination requires lengthy growing periods.
- Suspicious plant material may not be available in the quality needed for comparison.
- The living plant material of the protected variety may not correspond completely to the variety description as established after the DUS test.
- The place of comparison, the growing conditions and the examiner may not be the same as during the DUS test.

To overcome these difficulties it was suggested to consider the use of molecular techniques. It is proposed to investigate the possibility of setting up a DNA fingerprint which could be attached to the variety description when a plant breeder's right is granted with the aim of having a rapid and powerful tool for the enforcement of plant breeder's rights.

Situation in UPOV concerning the use of molecular techniques in variety identification

The request to consider the possible use of molecular techniques in variety identification has been brought forward to the sessions of the different UPOV bodies in 2004. The scope for discussion has been extended to "the possible use of molecular tools for variety identification in relation to the enforcement of plant breeder's rights, technical verification and the consideration of essential derivation".

Document BMT/10/2 explains the latest developments in UPOV concerning those discussions. At present, the terms of reference of the BMT include to "provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of essential derivation and variety identification". The discussion on how to implement the use of molecular techniques in variety identification would be the next step.

Elaboration of technical protocols

As for the DUS testing on morphological characteristics, the application of molecular techniques in variety identification would require the establishment of harmonized technical protocols. In this frame, markers should be considered as characteristics and as such fulfil the same requirements as any other characteristic (see UPOV General Introduction document TG/1/3).

By establishing a technical protocol, markers and methods would be defined.

Depending on the method of propagation, methods for sample taking and judgement of variability of the fingerprint within one variety would need to be agreed. Furthermore, the protocol would need to define the samples of plant material to be used. It would be preferable to use the same plant material for comparison as used for the DUS test, if that was possible (e.g. for seed samples).

Scenarios in which suspicious plant material matched morphologically the protected variety but not its fingerprint would need to be addressed.

The question on accessibility to markers and methods would need to be addressed.

Depending on the strict application of the protocols, laboratories could be accredited as competent in this field.

Aspects to be clarified

The use of molecular techniques in variety identification would raise aspects which would need elaboration, such as

- What would be the legal consequences for authorities when offering the possibility to attach fingerprints?
- Would the attached DNA fingerprint form part of the "official" variety description?
- Should fingerprints be attached as standard or only on request?
- Who would bear the cost of this additional work?

Consequences and further questions

As a consequence of the above, breeders would need to maintain their varieties uniform and stable in the expression of their "fingerprint". However, if this could be achieved, one could question if the same markers and methods could not be considered for the technical verification of the continuing existence of the variety. This would add to the value of a DNA fingerprint.

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