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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES AND DNA PROFILING IN PARTICULAR

Eleventh Session
Madrid, September 16 to 18, 2008

ADDENDUM

THE SPANISH EXPERIENCE (GESLIVE-IRTA) ON THE ENFORCEMENT OF PLANT VARIETY RIGHTS: DNA-FINGERPRINTING

Document prepared by experts from Spain

The Spanish Experience (GESLIVE-IRTA) on the Enforcement of PVR: DNA-Fingerprinting

UPOV
11th Session of the BMT Working Group
Madrid – 16-18 September 2008

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INTRODUCTION

- **Enforcement of PBR** might encounter several difficulties, arising in first place from the exact identification of the variety to which the plant material suspected of being illegally reproduced belongs to.
- **"Variety"** **(UPOV Convention, 1991 Act, Art. 1 (vi)** is defined by the expression of the characteristics that results from a particular genotype or combination of genotypes, in terms of a morphological description through technical examination by field trials.

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INTRODUCTION (II)

- Enforcing the PBR (detection or establishment of infringements) and for many crops (fruits, cut flowers, vegetables) it is not possible in practice to implement these technical examination, as:
  - Observations could require a long time, even several years, of field trials
  - You could find only the harvested material (market), which don't coincide with the reproductive material
  - Reproduction of characteristics could be highly improbable (hybrids)
- In those cases, practical enforcement of PBR requires techniques to identify the variety at any stage of plant development and in different tissues

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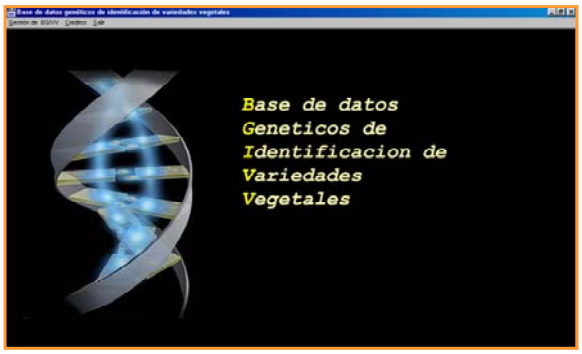
IMPLEMENTING A GENETICAL DATABASE FOR PLANT VARIETY IDENTIFICATION



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IMPLEMENTING A GENETICAL DATABASE FOR PLANT VARIETY IDENTIFICATION

- Molecular Markers (PCR – Microsatellites, SNP's, etc.) are not only an easy and cheap tool, but in many cases the sole way to prove the varietal identity
- To ensure the efficient and rigorous application of this technology at the enforcement of PBR, in 2003 GESLIVE and IRTA concluded an "Agreement for the development of a genetic data base for plant variety identification"
- The main database' aim is identifying the genetic profile of protected plant varieties by developing specific molecular markers and systematising all this information in a database (BDGIVV)

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IMPLEMENTING A GENETICAL DATABASE FOR PLANT VARIETY IDENTIFICATION

- The BDGIVV database currently incorporates up to 300 varieties (peach-nectarine, apricot, plum, cherry, strawberry, almond, carnation, citrus, grapevine, wheat and olive)
- To avoid errors and doubts, all samples to obtain the marker profiles are taken directly from the official reference collections held by the Examination Offices (CPVO, OEVV)

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DEFENCE OF PLANT VARIETY RIGHTS THROUGH DNA IDENTIFICATION

- The BDGIVV database has enabled GESLIVE to secure information of the greatest value in the investigation of possible infringements of PBR
- Every campaign, hundreds of samples from suspicious materials are collected and genetically analyzed by comparing them with the BDGIVV
- Samples could be taken from seeds, plants, leaves, fruits, flowers, etc., at the field or any stage of the commercial chain

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A PRACTICAL EXAMPLE: THE REGULARIZATION AGREEMENTS IN THE SPANISH FRUIT SECTOR

- In 2003 and 2008 GESLIVE has arrived to massive regularization agreements regarding protected varieties with the Spanish fruit sector (farmers unions, cooperatives and associations)
- The BDGIVV database has been (and is being) used in large scale for variety identification on occasion of such massive regularization agreements

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ADMISSION OF DNA IDENTIFICATION BY THE SPANISH COURTS

- Variety identification through DNA techniques was used by GESLIVE at 50 legal proceedings for PBR' infringement in Spain during the last five years
- Analysis were performed by IRTA using MS markers by comparison with the BDGIVV database
- The evidence is based on reports that set up the probability of finding the same DNA profile in another variety (in our experience, at least 1 in a trillion)

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ADMISSION OF DNA IDENTIFICATION BY THE SPANISH COURTS (II)

- Spanish Courts have fully admitted the validity of DNA analysis as evidence in infringement cases, in any case reversing the burden of proof
- Several sentences are available at the CPVO Database on PVR Case Law (www.cpvo.europa.eu)

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CONCLUSIONS

- Variety identification through DNA techniques can be an essential instrument to enforce the plant breeder' rights in many cases, as it was recognized by the Spanish Courts.
- But at our present state, effectiveness of those techniques varies very much according with the species considered
- Error cannot be ruled out even at species (as *prunus)* where the techniques usually give good results: mutations, near lines, retro-crossing, etc.
- UPOV Convention and EU regulations should gradually admit those techniques for official DUS tests, according with the progress of technology.

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MANY THANKS FOR YOUR ATTENTION!

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