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USE OF MOLECULAR MARKERS AS A TOOL TO ENFORCE PLANT BREEDERS' RIGHTS (PBR) IN SOYBEAN IN URUGUAY

Document prepared by an expert from Uruguay

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1.　　Uruguay, through the National Seed Institute (INASE) and the Uruguayan Plant Breeders Association (URUPOV), will present a successful case study on the use of molecular markers for the identification of soybean varieties.

2.　　This technology has become a key tool to ensure compliance with plant breeders' rights, protecting registered varieties and promoting the fair and innovative use of genetic material.

3.　　The project was developed collaboratively and has made it possible to establish a genetic database containing the profiles of protected and commercial soybean varieties. This has enabled the design of a varietal verification system applied to samples (seed & leaf) collected in the field or from the market, using SNP markers and advanced comparative tools, including specialized software, algorithms, and molecular databases.

4.　　During the presentation, both institutions will provide a detailed explanation of the methodology used—from sample collection, molecular analysis of genetic profiles, to the detection of potential market irregularities.

5.　　Institutional learnings from this experience will be shared, along with concrete results obtained after more than four years of continuous implementation. The positive impact of this tool on seed trade oversight will be highlighted, including improved system transparency and strengthened varietal traceability.

6.　　The presentation will also address the inter-institutional cooperation agreements that made this initiative possible, the value of regional cooperation, and the technical and regulatory challenges faced during national implementation. This experience aims to serve as a replicable model for other countries and regions, where science and technology can play a pivotal role in protecting intellectual property in seeds.

7.　　Currently, both institutions are developing a new cooperation agreement to validate the use of optical markers and artificial intelligence for the identification of soybean, wheat, and barley varieties. This initiative seeks to accelerate analysis times and reduce costs while maintaining high levels of accuracy and reliability—representing a further step toward technological innovation in seed trade monitoring and enforcement systems.

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