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Role of Molecular Markers in Plant Variety Protection Act

Protection of Plant varieties and Farmers Rights Act (PPV & FR) is a unique law that India has passed to safeguard plant varieties through registration. To protect plants from environmental effects and to use molecular markers that are dependable, quick and affordable, it is crucial to identify and register plant varieties. The traditional method for the identification of variety involves recording of morphological traits, which is time consuming, labor intensive and highly influenced by environmental factors. The extensive use of molecular markers in all the major crops has created a new opportunity for their application in the recognition and preservation of plant varieties.

PROTECTION OF PLANT VARIETIES BY MOLECULAR MARKERS

The increasing expenses of commercial and public research expenditure, as well as the economic rate inherent in these intellectual properties, have sparked interest in the legal protection of plants. Investor scrutiny has also intensified as a result of recent developments in biotechnology and the complicated implications they have for gene editing, or the potential selective insertion of alien genes. Protecting research products that can act as rewards or motivation for future investment has thus become economically necessary. There are five basic types of plant protection in the United States *viz* trade secrets, contract, Plant Patent act - PPA, Plant Variety Protection Act - PVPA and utility patents.

"Plant Breeders Rights" provide protection for plants throughout Europe. It is evident that opinions about the legal significance of genetic marker loci for plant variety protection vary widely. In order to obtain agreement on the use of genetic markers in plant variety protection, it is necessary to first explore key topics that need more debate. In order to demonstrate by way of example:

(1) The value of molecular markers in the production of hybrid seeds and

(2) Their potential value for establishing plant variety uniqueness to evaluate biological diversity and distance, as well as important derivation as it pertains to hybrid development and protection.

The numerous "distinctness criteria" for plant protection can be framed using the morphological and biochemical properties of plants. If these traits have a quantitative or qualitative inherent foundation, they can be utilized to estimate genetic differences between kinds. There is, however, a discrepancy about the legal significance of molecular marker loci for the protection of plant variety, as evidenced by the literature, perspectives made at professional conferences, as well as legal testimonies provided during plant variety infringement cases.

CONCLUSION

Plant variety discrimination, molecular breeding, and other fields make extensive use of molecular marker technologies. Molecular marker screening is commonly utilized to reduce testing costs and increase data analysis efficiency. Currently, different types of molecular markers are available for genetic analysis and new marker systems are being developed continuously. If suitable sequence-based tests are available, it is possible to identify a variety in a mixture of grains. It may be concluded that molecular markers may be employed as additional or supplement descriptors for resolving the distinctiveness of plant varieties where the morpho-physiological DUS descriptors are unable to demonstrate the distinctiveness of a variety.