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**CORN HYBRID PARENTAL IDENTIFICATION: THE USE OF HYBRID MONOMORPHIC PROFILE
COMPARED TO PERICARP GENOTYPING***Document prepared by an expert from the Seed Association of the Americas (SAA)**Disclaimer: this document does not represent UPOV policies or guidance*

Corn global production exceeded 1 billion metric tons* this past year and it is commercialized as a hybrid crop. This means it contains at least two sets of parental components which frequently are from different heterotic groups. Parental lines take a long time and a high skill level to develop as well as considerable investment by seed Companies. However, even a small number of seeds, if misappropriated, can be used to reproduce an inbred line and thus deprive the rightful developer of a valuable asset. Such parental line can be used in combination with a different inbred to create a novel hybrid product, which in turn would be extremely difficult to identify in the market by using solely morphological characteristics.

This approach demonstrates the relatively simple use of hybrid monomorphic profiling as an effective parental discrimination method. Our objective is to validate this method in comparison with the use of pericarp DNA which is a well known, yet more elaborate, method to detect parental lines, specifically the female parent. Plant and marker materials used in the experiment are proprietary and therefore will be given experimental names. Genotyping methods included both Illumina Fingerprinting and Genotyping by Sequencing (GBS).

Utilizing fingerprinting results, monomorphic profile of hybrid samples were compared to their parental genotypes, both male and female, to demonstrate its high similarities to these.

Likewise, using GBS results, monomorphic profile of hybrids were compared to their parent lines. Additionally, these same hybrid monomorphic profiles were compared to their pericarp genotypes to demonstrate similar detection ability of these two techniques. Experimental error due to contamination of pericarp DNA with endosperm DNA will be examined.

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* USDA, FAS Grain: World Markets and Trade, Jan. 12, 2018