Position Statement on the Use of Genetic Data in Testing for Distinctness, Uniformity and Stability (DUS) under UPOV

The Convention of the International Union for the Protection of New Varieties of Plants (UPOV) provides a legal framework for Distinctness, Uniformity, and Stability (DUS) testing for the intellectual property (IP) protection of plant varieties. The American Seed Trade Association (ASTA) supports the use of genetic data in testing for DUS when its use is technically robust and when it maintains or enhances current levels of IP protection afforded by Plant Variety Protection (PVP). Genetic data complement morphology variety characterizations by providing more efficiency, precision, and accuracy for DUS determinations[1].

While ASTA believes that morphological characteristics should continue to provide a commonly accepted basis for DUS determination, genetic data can be a valuable means to facilitate DUS testing. Among other advantages, DNA-based genetic analysis can select most similar varieties for DUS testing to provide more precise, consistent, and comparable results more efficiently. Comparison of morphological characteristics can be complicated due to variations caused by differences in environmental and field conditions from year to year and location to location. Therefore, the use of genetic data can enhance the quality of information provided in support of a PVP application because the variety owner can demonstrate DUS by assessing morphological characteristics and by performing DNA-based genetic characterization as technically available. A combination of genetic data and an informative set of morphological characteristics improves efficiency of the DUS process.

PVP authorities should consider and address emerging issues as uses of genetic data are incorporated into their DUS systems. In this regard, PVP authorities would benefit from participating in and keeping fully abreast of the work that is reported under the auspices of the Technical Working Party on Testing Methods and Techniques (TWM)[2]. PVP authorities should also interact and collaborate with national, regional, and international breeding organizations at the forefront of technological advances to deploy DNA-based genetic characterization for DUS testing.

ASTA recommends that breeding organizations and PVP authorities jointly formulate plans to further implement the use of genetic data for DUS determination. They should undertake the following steps to establish the technical foundation and operational processes required to use genetic data for DUS assessment on a crop-by-crop basis:

- Create a library of vetted and validated publicly available genetic data;

[1] For the purposes of this position paper, ASTA defines “genetic data” as the analyzed output from DNA-based genetic characterization of a variety.

[2] Work was previously reported under the Biochemical and Molecular Techniques Working Group of UPOV (BMT)

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- Create a publicly available compilation of technological expertise and other resources for breeders and PVP authorities;
- Evaluate and adopt methodologies and technical proposals put forward by technical working groups for use of genetic data in PVP process; and
- Perform ongoing assessment of practical realities and needed capacity for successful implementation.

As an example, ASTA members established a technical foundation for use of genetic data to determine a threshold for measuring DUS in soybeans, which was peer-reviewed and published in *Crop Science*[3].

ASTA strongly supports and encourages the expanded use of genetic data as described in this paper to augment morphological information in order to facilitate DUS determination and optimize plant variety protection.

Approved by the ASTA Board of Directors February 5, 2021

[3] Achard, F, Butruille, M, Madjarac, S., et al. Single nucleotide polymorphisms facilitate distinctness-uniformity-stability testing of soybean cultivars for plant variety protection. *Crop Science*. 2020; 60: 2280– 2303. https://doi.org/10.1002/csc2.20201