

**Working Group on Biochemical and Molecular Techniques  
and DNA-Profiling in Particular**

**BMT/19/6 Add.**

**Nineteenth Session  
Alexandria, United States of America, September 23 to 25, 2020**

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**ADDENDUM TO:  
VMDUS - VALUE-MOLECULAR LINKED DISTINCTNESS DETERMINATION**

*Document prepared by experts from France, Italy and the United Kingdom*

*Disclaimer: this document does not represent UPOV policies or guidance*

The annex to this document contains a copy of a presentation on “vmDUS - Value-Molecular linked Distinctness determination”, prepared by experts from France, Italy and the United Kingdom, made at the nineteenth session of the BMT.

[Annex follows]

## BMT\_19 Meeting 23 September 2020

### vmDUS – A Value-Molecular Linked Concept for Determining Distinctness

experts from France, Italy, United Kingdom

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### Motivation for the vmDUS Concept

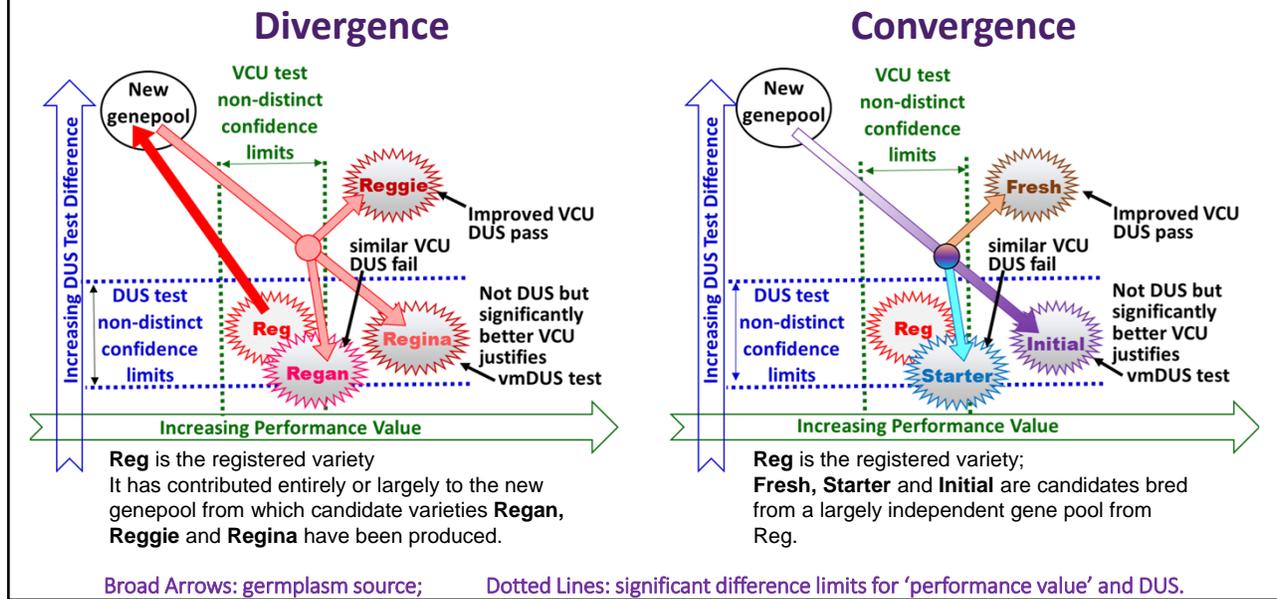
- Protection without Implication:  
If a DUS methodology fails to distinguish a candidate variety with superior end-user value from a lower-value existing registered variety, the protection of the older variety holds precedence.
- UPOV's Mission Statement:  
*"provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society"*
- Undesirable Consequences:  
While the initial breeder's IPR is correctly prioritised, the breeding progress within the new candidate is discarded  
Unsatisfactory outcome for UPOV as it contravenes a major aspect of its mission statement.

While there have been many studies showing how molecular methods can provide distinctions that traditional DUS methods fail to reveal, concerns exist in certain quarters regarding the need to retain the present PBR protection levels for existing registered varieties.

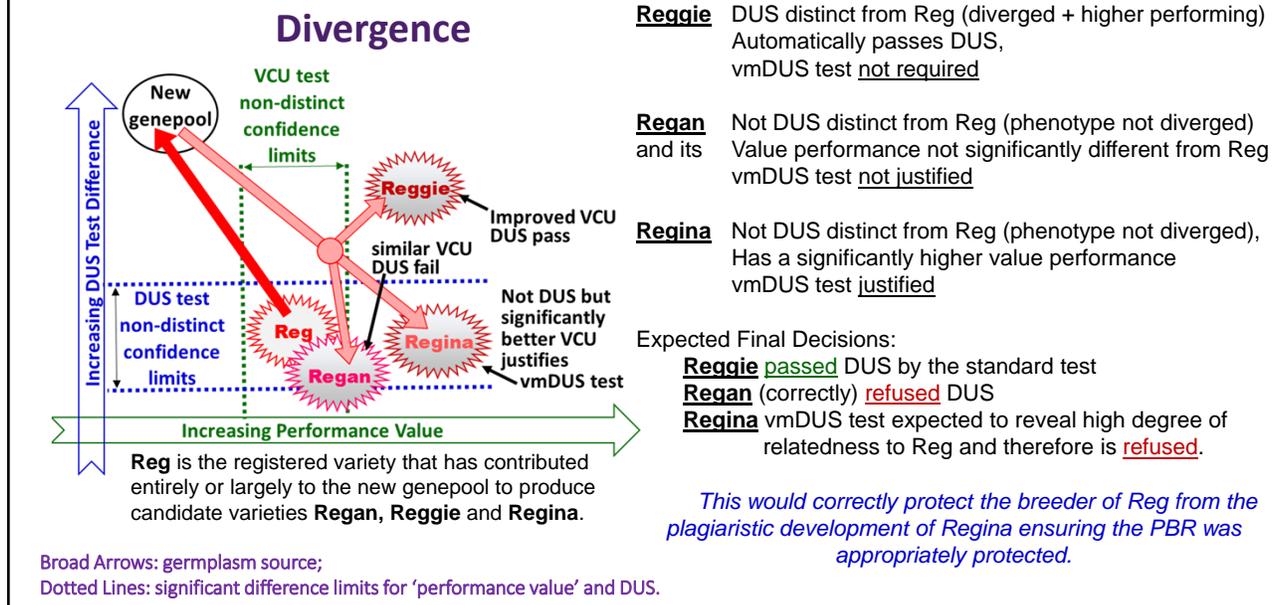
Therefore the vmDUS proposal is strictly limited to examinations of a candidate and its blocking registered variety,

- **ONLY** when there is clear proof that the candidate is VCU superior to that registered variety
- **ONLY** then is molecular evidence sought on the genetic independence/dependence between that variety pair

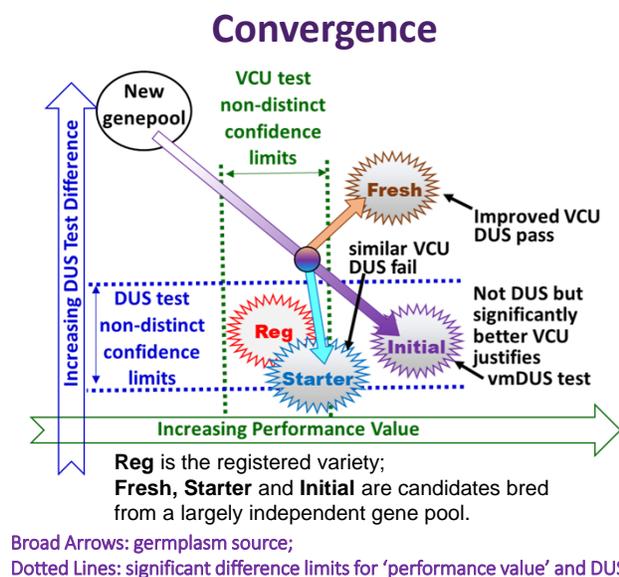
## Pictorial Representation of Divergent & Convergent Relationships



## Pictorial Representation of the Divergent Relationships



## Pictorial Representation of the Convergent Relationships



**Fresh** DUS distinct from Reg (+ higher performing)  
Automatically passes DUS,  
vmDUS test not required

**Starter** Not DUS distinct from Reg (phenotype converged)  
Value performance is not significantly different,  
vmDUS test not justified

**Initial** Not DUS distinct from Reg (phenotype converged),  
Has a significantly higher value performance  
vmDUS test justified

Expected Final Decisions:

**Fresh** passed DUS by the standard test

**Starter** (correctly) refused DUS

**Initial** expected to have a large genetic distance from Reg  
and so to pass DUS by a vmDUS test

*This would correctly reward the breeder of Initial for achieving a significant genetic improvement by a valid breeding activity and ensure it could be marketed to benefit users.*

## vmDUS - Value-Molecular Linked Distinctness Determination

### Response to Comments:

- **“Important issue is link between VCU and DUS & who/what determines value”**  
The intention is not to remove the decision responsibility from the DUS authority  
The ‘significant VCU improvement’ would be a claim initiated by the breeder (possibly on a DUS refusal)  
only data from official VCU tests for variety registration accepted  
only comparisons to the registered variety (e.g. Reg) accepted  
must be statistical difference (not expert decision judging a ‘clear improvement’ overall)
- **“The performance value potential will be set differently among members”**  
The critical requirement is a significant improvement in official VCU tests for National Listing (where submitted)  
not data from any other breeder or independent evidence of significant difference  
not justified by a National Listing of a minor species on the basis of diversity with not stats  
not justified by passing an official VCU test showing market value (ONLY by pair-comparison)  
If candidate and registered variety have not been tested together there are over-years analytical methods to allow indirect comparisons to be statistically assessed.  
If the statistical comparison can’t be made then the vmDUS test **CANNOT** be initiated.  
so species without official VCU tests not eligible (e.g. ornamentals/some amenity/minor spp.)
- **“Next Steps Missing”**  
No next steps considered prior to presenting to BMT but we would suggest:  
1) Seek BMT acceptance for the vmDUS principle and its rules of operation, then from UPOV/ISF.  
2) Initiate a species by species establishment of vmDUS tests & rules (e.g. *Lolium* EDV thresholds)

As morphophysiological DUS characters can’t easily differentiate divergence from convergence, we believe this vmDUS proposal offers UPOV a ‘safe’ means to resolve specific cases that inhibit breeding progress.