INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES AND DNA PROFILING IN PARTICULAR

Twelfth Session
Ottawa, Canada, May 11 to 13, 2010

ADDENDUM

COMBINING PHENOTYPIC AND MOLECULAR DISTANCES IN THE MANAGEMENT OF REFERENCE COLLECTIONS:
APPLICATION TO SPRING BARLEY

Document prepared by an expert from France
Combining Phenotypic and Molecular Distances in the Management of Reference Collection
Application to Spring Barley

- Model as developed on Maize
- Spring Barley: large reference collection
  many new applications,
  lot of pair comparisons in DUS tests

Improvement of selection of comparable varieties

UPOV BMT Ottawa May 2010
J. GUIARD GEVES France

- 500 spring barley varieties
- 30 SSR markers: 234 alleles
  high polymorphism
  good level of uniformity
- assessment of phenotypic similarity on 250 pairs of varieties by experts:
  note 1: identical or very similar, note 9: totally distinct

UPOV BMT Ottawa May 2010
J. GUIARD GEVES France
Combining Phenotypic and Molecular Distances in the Management of Reference collection
Application to Spring Barley

Relation between Roger's distance and Expert notes

Observation of 152 pairs of spring barley varieties
(2008, La Minière and Le Magneraud)

- Experts (maxi of the 2 means)
- Rogers distance
- Threshold for morphological data
- Threshold for molecular distances

Super Distinct varieties
Distinct varieties on the basis of Morpho 10 + Rogers 0.3
To put in the field
To put in the field

GAIA

Threshold for morphological data
15
10

Threshold for molecular distances
0.1 0.3 0.5 0.7
Combining Phenotypic and Molecular Distances in the Management of Reference Collection
Application to Spring Barley

- New assessment on phenotypic similarity on 900 pairs in 2009
  Confirmation of the molecular threshold 0.3
- Specific test to define precisely the GAÏA threshold
  10 is the minimum to get enough security

Effect of GAÏA threshold on the number of pairs in field test

20 varieties in 2nd year of test in 2009

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