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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

AD HOC CROP SUBGROUP ON MOLECULAR TECHNIQUES FOR ROSE

Second Session
Angers, France, April 18, 2007

ADDENDUM TO DOCUMENT BMT-TWO/ROSE/2/3

PROPOSAL FOLLOW UP OF R&D PROJECT:
A EUROPEAN COLLECTION OF ROSE VARIETIES

Document prepared by experts from the European Community (CPVO)

This document is an addendum to document BMT-TWO/Rose/2/3 "Proposal Follow Up of R&D Project: A European Collection of Rose Varieties" and contains a copy of the presentation made by Mr. Ben Vosman, Netherlands.

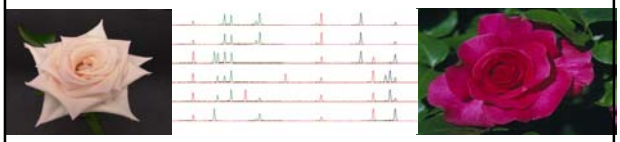
Raad voor plantenrassen

NIAB National Institute of Agricultural Botany

Bundessortenamt

A European reference collection of rose varieties

'CPVO rose project'



Rose

- Most important ornamental crop
- More than 25,000 varieties of modern rose (Cairns, 2000)
- More than 10,000 hybrid tea varieties
- Rose list 2006: more than 13,000 varieties in commercial trade
- Large collection of roses in "common knowledge"

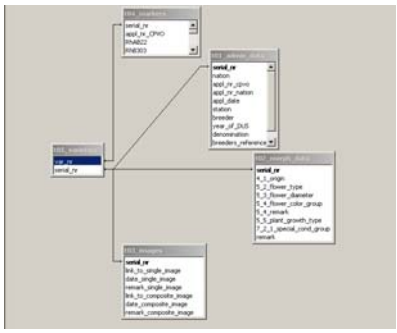
Objective

- Construction of an integrated pilot database containing:
  - Administrative data
  - Key morphological descriptors (some TQ characters)
  - Photograph of the variety
  - Molecular profile (based on Microsatellite markers)
- Evaluation of the database

Division of work

- Garden roses UK + DE
- Greenhouse roses NL

Structure of the database



Morphological descriptors

- selected from CPVO/TQ-EN-011

4.1	Origin
5.2	Flower: Type
5.3	Flower: diameter
5.4	Flower colour group
5.5	Plant Growth Type
7.2.1	Special conditions: Group

Flower from the top

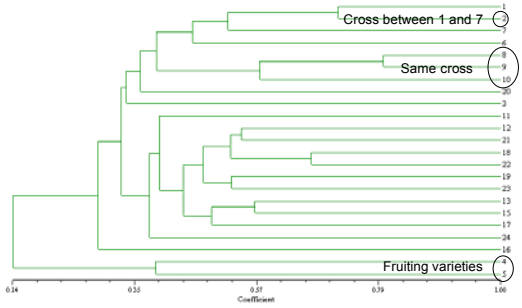
Composite photo

Selected markers

STMS	linkage group	No. of alleles in 23 varieties	No. of allele phenotypes	Selected for	Scoring quality
RhO517	1	5	14	gr/ht	1
RhEO506	2	12	19	gr/ht	1
RhD221	4	8	12	gr/ht	1
RhE2b	6	7	12	gr/ht	1
RhB303	unknown	6	14	gr/ht	1
RhP519	unknown	7	15	gr/ht	1
RhAB40	4	11	18	gr/ht	1
RhD201	unknown	7	10	gr/ht	1
RhAB22	6	12	15	gr/ht	1
RhP50	3	11	13	Gr	1
RhP518	5	7	15	Gr	1
RhAB73	7	9	18	Gr	1
RhM405	unknown	5	13	Ht	1
RhAB15	2	10	5	Ht	1
RhO507	4	14	18	Ht	1

garden roses (Gr), glasshouse roses (Ht) or both (gr/ht).

Dendrogram obtained for the 23 varieties



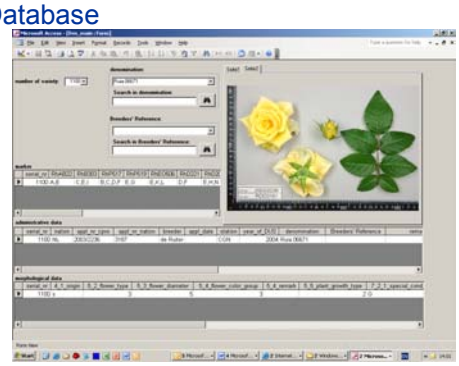
Standardisation between laboratories

- Proved to be very difficult, poor DNA quality from garden roses
  - Often weak amplification
  - Differences in signal intensity resulted in scoring of a peak in one lab as a marker and not scoring the same peak in the other lab
  - Missing values
  - Mis-scoring of alleles
- Marker data from one lab only

Database content

- 400 varieties included
  - 314 varieties on behalf of the CPVO
- Morphological data available for all
- At least one photograph for 215 varieties
  - 193 single pictures and 184 composite pictures
- Molecular profiles for 364 varieties.

Database



Evaluation of the database (1)

Morphological descriptors

- are useful, although usefulness varies with rose type
- greenhouse cut flower roses, most varieties currently fall into the same flower and plant growth type
- Flower color group frequently (38% of the case in greenhouse roses) wrongly indicated on TQ
- A ring test will be useful to ensure continued consistency of scoring

Evaluation of the database (2)

Photographs

- Very important
- For greenhouse roses the composite photo is not so informative as there is very little variation in the extra characteristics photographed
- For the garden varieties the composite adds very useful information
- Point for consideration: cost involved

Evaluation of the database (3)

Molecular data

- Seedling varieties show unique patterns
- Mutants and mutant groups show the same molecular profile
- For two pairs of varieties there is still uncertainty about their nature
- Useful for spotting mutants
- More effort is needed to harmonize the molecular marker analysis between different laboratories

Use of the database:

- Characterization and cataloging of the reference collection
- Pre-screening and selection of appropriate reference varieties
- Exchange of data on current candidate varieties between testing stations
- To reduce permanent living reference collections at testing stations
- Quality assurance within examination offices (verification of identity/authenticity)

Advantage for breeders

- Database and molecular profiles based on material submitted for DUS testing
- Identification label for tracing infringements
- Evidence in EDV cases
- Better possibilities to enforce rights

Participants:

BSA
- Burkhard Spellerberg
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NIAB
- Elizabeth Scott
- Huw Jones

Dutch Plant Variety Board
- Joost Barendrecht

PRI
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BSA Bundessortenamt
EUROPEAN UNION Community Plant Variety Office