

**Working Group on Biochemical and Molecular Techniques
and DNA-Profiling in Particular****BMT/16/27****Sixteenth Session
La Rochelle, France, November 7 to 10, 2017****Original:** English
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THE TOMATO PROJECT PROPOSAL IN CPVO IMODDUS PROGRAM*Document prepared by an expert from the Netherlands**Disclaimer: this document does not represent UPOV policies or guidance*

The Annex to this document contains a copy of a presentation “The Tomato project proposal in CPVO IMODDUS program” to be made at its sixteenth session of the Working Group on Biochemical and Molecular Techniques and DNA-Profiling in particular (BMT).

[Annex follows]

THE TOMATO PROJECT PROPOSAL IN CPVO IMODDUS PROGRAM

Presentation prepared by an expert from the Netherlands



The Tomato project proposal in CPVO IMODDUS program

Hedwich Teunissen

UPOV BMT - November 2017



Title and scope of the project

Title:

**Development and validation of an harmonized SNP set for
the genetic distinctness testing of tomato varieties of
common knowledge**

Ultimate goal: database

First step: this project



Project Partners

In EU:

- GEVES
- Naktuinbouw

Outside EU:

- DUS testing center of MOA China



Why tomato?

- Very important vegetable crop with many new applications each year
- World wide breeding activities and trade. No restriction to regions or countries
- Number of existing varieties (common knowledge) is high
- There is a need to manage the variety collection because:
 - No full overview of common knowledge
 - Subjectivity of the variety descriptions by different climate and environmental factors world wide



Why tomato?

- Tomato is a model crop, also in science
- A lot of molecular and DNA sequence data is publically available
- Ideal system for a 'proof of principle'



Objectives and Tasks

- Identification of tomato-specific SNP markers (task 1&2)
- In silico selection of SNP markers based on quality criteria (task 3)
- In vivo selection of SNP markers based on performance (task 4)
- Validation of SNP markers within and between laboratories (task 5)
- Publication of the results (task 6&7)



Task 1

- Define quality criteria for SNP selection
- Define training set of varieties that is representative for broad diversity covering collections in NL, FR and CN.
- Define test set of varieties that represent difficult samples in respect to DUS and controls (e.g. same variety different lot; maintenance samples; same type but different resistances)



Task 2

Strategies for the Identification of SNP (genetic diversity in training set)

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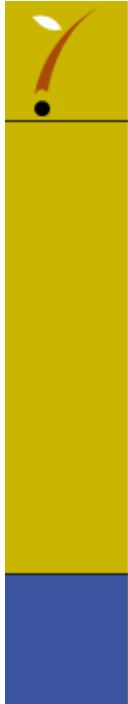
Select SNPs from publically available genome sequences that represent genetic diversity

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Screen commercial available SNP arrays to obtain SNPs from our selection of varieties

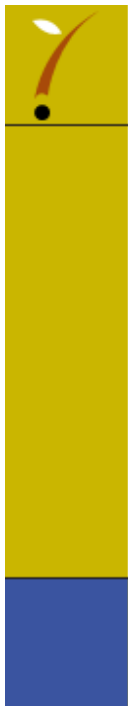
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Re-sequence selection of varieties to obtain SNPs



Task 3

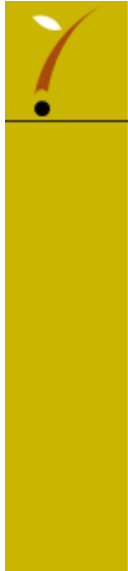
First round of selection of SNPs based on task 1 and 2



Task 4

Test the first round selected SNPs in the labs (NL and FR)

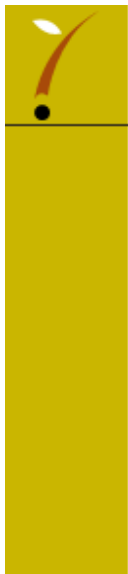
Result: second round of SNP selection



Task 5

Validation of selected SNPs within and between labs

Result: final round of selection

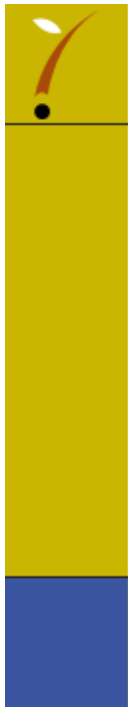


Task 6 & 7

Publish the results in scientific paper

SNP set will be available for all DUS testing authorities

SNP set is harmonized, not the SNP detection method



nak  *tuinbouw*

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