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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

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

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WORK ON MOLECULAR TECHNIQUES IN RELATION TO DUS EXAMINATION OF DIFFERENT FRUIT SPECIES

Document prepared by experts from France

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The Annex to this document contains a copy of a presentation "Work on molecular techniques in relation to DUS examination of different fruit species" to be made at its fifteenth session of the Working Group on Biochemical and Molecular Techniques and DNA-Profiling in particular (BMT).

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[Annex follows]

Work on molecular techniques in relation to DUS examination of different fruit species

UPOV – BMT/15 – May 2016, Moscow
Bénédicte Jaudeau, Muriel Thomasset, Anne Bernole, Arnaud Remay, Clarisse Maton, René Mathis
GEVES, France

GEVES
Expertise & Performance

DUS examination of fruit trees in France - Context

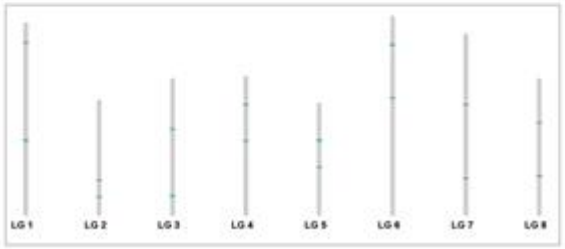
- GEVES is the Examination Office in charge of the DUS examination for fruit trees : peach, apricot, cherry, apple, pear
- The DUS examination is performed by INRA, as a sub-contractor of GEVES
- The DUS examination is performed according to CPVO TP and UPOV TG
- First molecular analysis on peach tree in 2007 in BIOGEVES
- 2011-2012 : molecular work on apricot in BioGEVES
- 2014-2015 : molecular work on apple and pear tree in BioGEVES
- 2015-2016 : molecular work on cherry tree in BioGEVES

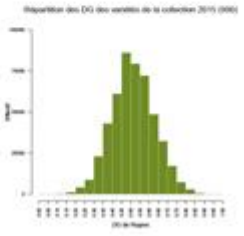
Peach tree: *Prunus persica*

- Project with the Community Plant Variety Office, Italy, Hungary and Spain from 2008 to 2011
- 16 SSR
- Now used to describe every new candidate varieties
- Development of the GEMMA web-based database
  - To share information on morphological data, molecular data and pictures
  - http://gem.geves.info/

Peach tree: *Prunus persica*

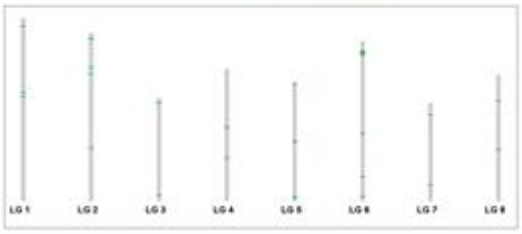
- Now **990** varieties are described with the set of 16 SSR
- Collaboration with INRA





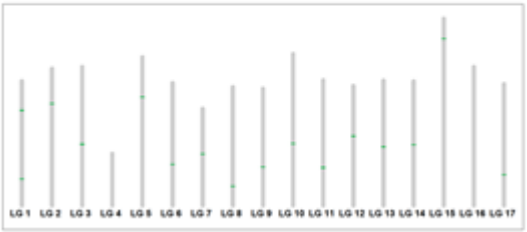
Apricot tree : *Prunus armeniaca*

- Collaboration with INRA since 2012
- 24 SSR
- Now used to describe every new candidate varieties
- Now **315** varieties are described with the set of 24 SSR



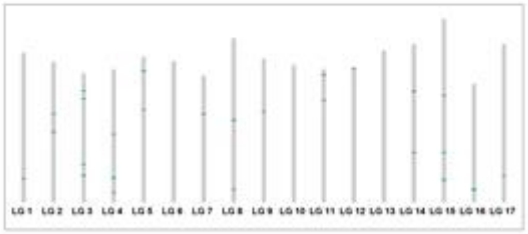
Apple tree: *Malus domestica*

- Collaboration with INRA
- Work on molecular data in BioGEVES since 2014
- 16 SSR
- Now used to describe every new candidate varieties
- Now **253** varieties are described with the set of 24 SSR



Pear tree: *Pyrus communis*

- Test of avalaible markers in 2014
- 29 SSR
- Now **136** varieties are described with the set of 29 SSR



Cherry tree : *Prunus cerasus*

- Under development

DUS examination of fruit trees in France – use of molecular data

- Description of the new varieties on the SSR sets by BioGEVES
- Additional information to the phenotype, kept in a database
- Looking for similar profiles / synonyms
- Conformity of reference samples when renewal of material

DUS examination of fruit trees in France – use of molecular data : Perspectives

- Management of reference collection
- Look for similar or close DNA profiles in a database -> identify close varieties on the basis of molecular data
- In parallell, look for similar or close varieties according to the TQ -> identify close varieties on the basis of phenotype
- How to combine information to be more efficient?

DUS examination of fruit trees in France – use of molecular data : Conclusion

- We want a reliable DUS examination
- A quick DUS examination, Less expensive
- The one cycle DUS examination can be an option
- Consider the help of Molecular markers
- With Additional cycle(s) when needed
- Consider -in a given region- a unique DUS examination for the community of EOs based on:

[plant material + phenotypic description + molecular description + DNA]
[and the use of cooperative shared DUS databases]

THANK YOU

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