USE OF PEDIMAP IN ROSBREED

FOR VISUALIZING GENETIC AND PHENOYYPIC DATA ACROSS PEDIGREES IN ROSACEOUS CROPS

Cameron Peace for Cholani Weebadde, Extension Team Leader, MSU

Outline of Presentation

❖ What is Pedimap?

❖ What does Pedimap Do?

❖ Who is Pedimap For?

❖ Some Pretty Diagrams

Outline of Presentation cont'd

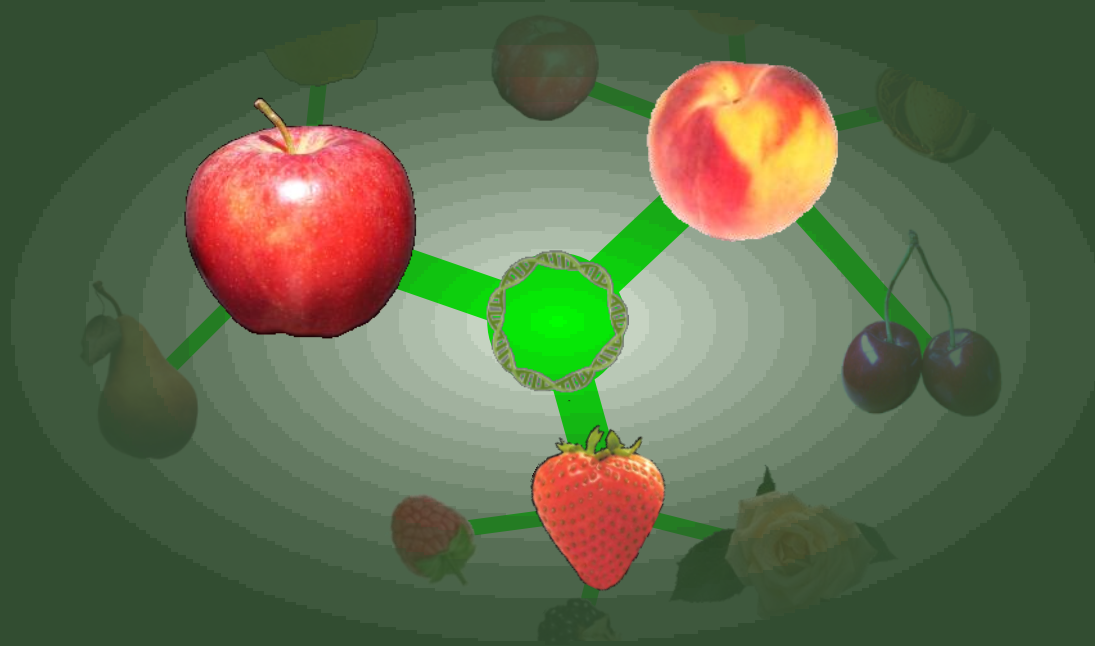❖ How Can I Get Pedimap?

Pedimap

Software for the visualization of genetic and phenotypic data in pedigrees

Roeland E. Voorrips, Wageningen UR – Plant Breeding

Pedimap is a tool for exploring and visualizing the flow of phenotypes and alleles (observed or based on Identity-by-Descent calculations) through pedigrees. It has tools for the manual and automatic selection of parts of the pedigree based on criteria such as ancestors and/or progeny to a specified number of generations, along the maternal, paternal or both lines, sibs etc. For each selection multiple views can be generated to display different linkage groups, phenotypic traits etc. Once a view is created for one selection, it can be automatically recreated for any other ... Pedimap can deal with numeric as well as textual phenotypic scores, and ... all as diploids. The genetic information can be displayed ... hence the name. ... bit versions,

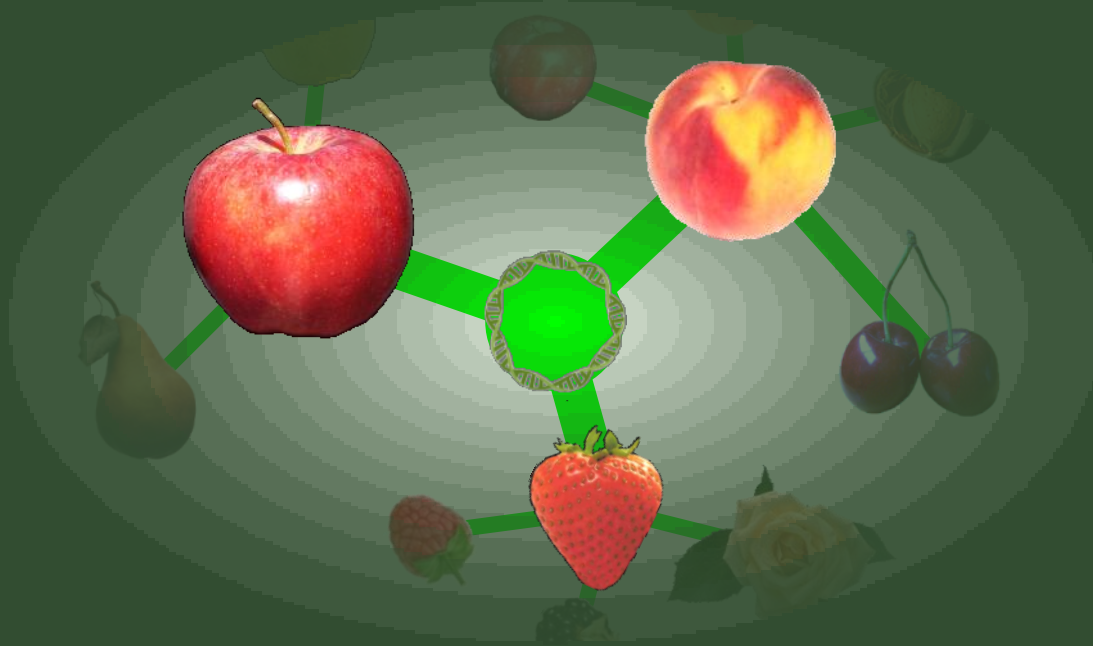www.plantbreeding.wur.nl/UK/
software_pedimap.html

What is Pedimap?

What is Pedimap?

- Software for exploring and visualizing the "flow" of phenotypes and alleles through pedigrees

- Developed by Roeland E. Voorrips at Wageningen UR – Plant Breeding, The Netherlands

- Freely available!

What does Pedimap Do?

What does Pedimap Do?

- Can be used to present genetic information such as:

    - phenotypic traits

    - scored marker alleles

    - Identity-By-Descent probabilities

    - QTL functional allele probabilities

What does Pedimap Do?

- Allows breeders to visualize distribution of desirable alleles for important traits across their germplasm

→ To support decisions in parent selection and crossing
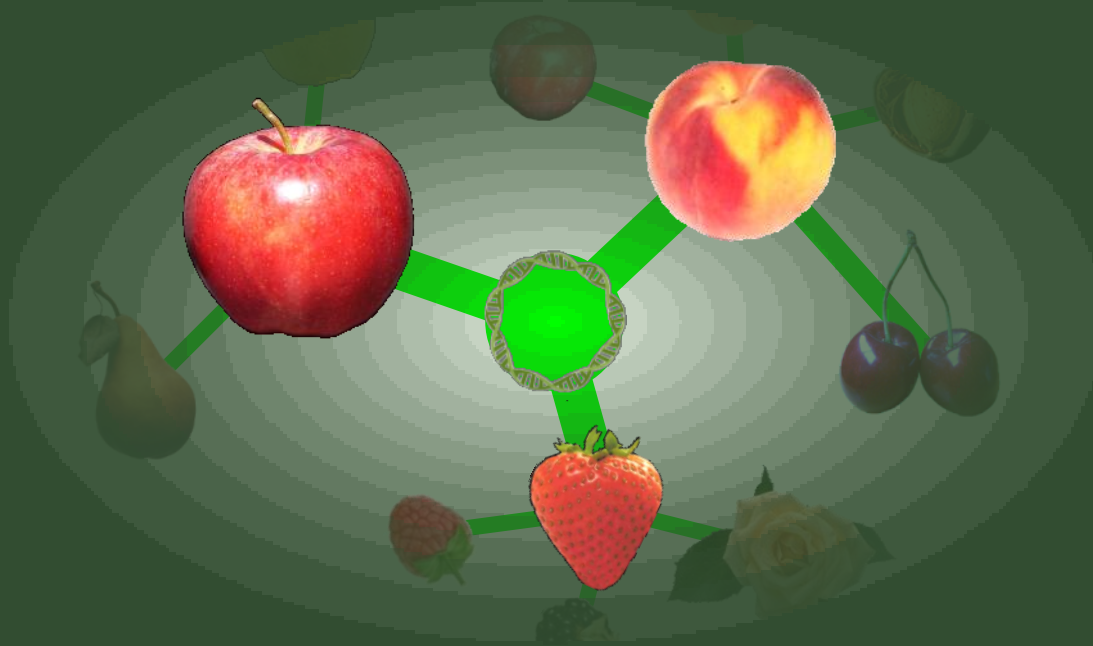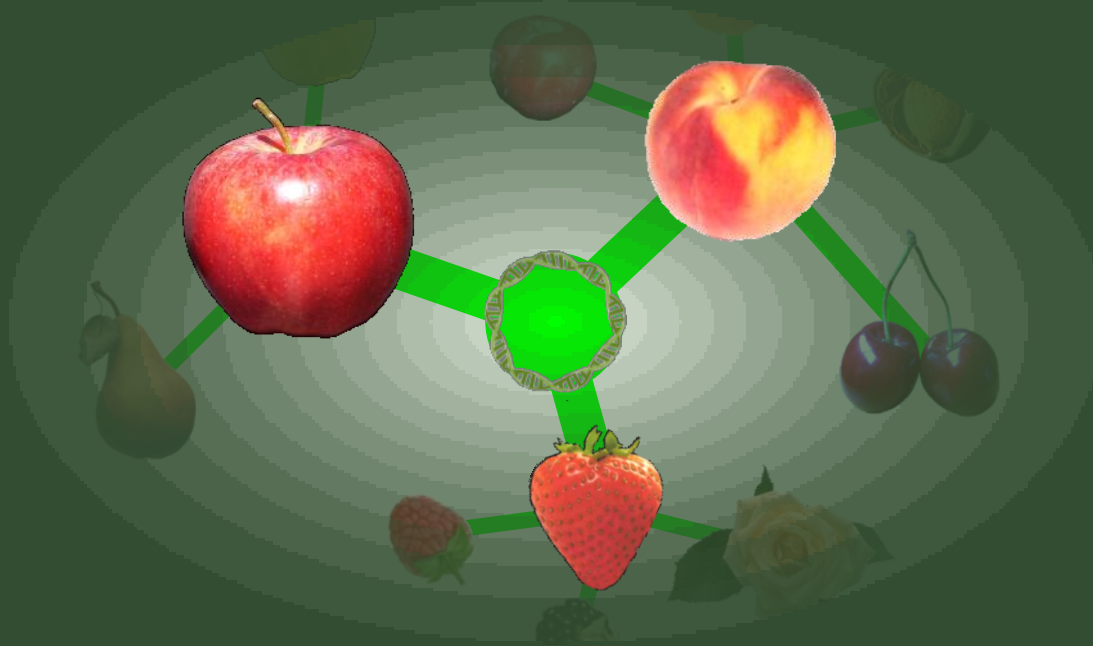
Who is Pedimap For?
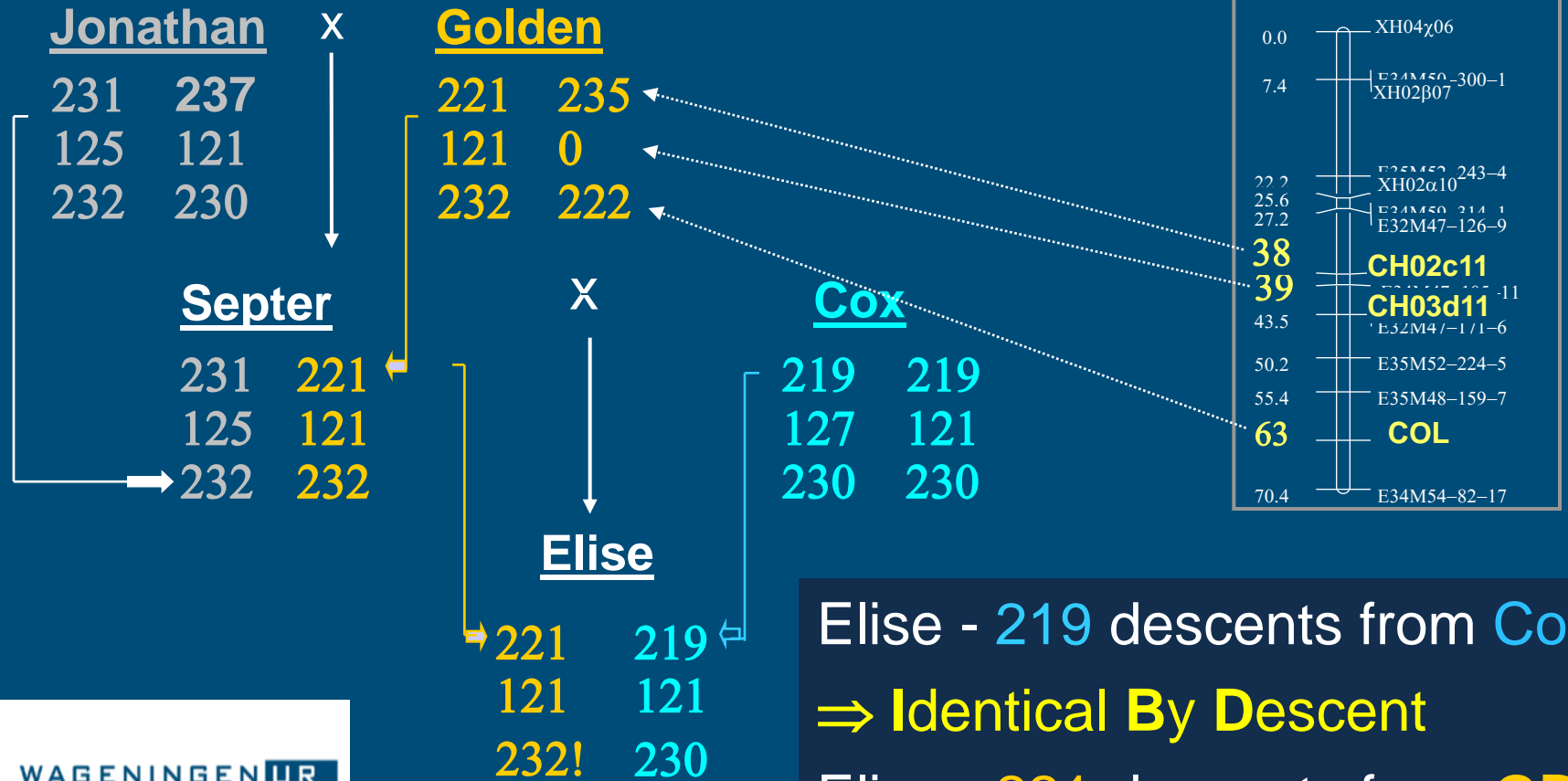
Who is Pedimap For?

- Plant Breeders!
  who…
  - Want to see pedigree relationships of traits to make crossing decisions
  - Work with complex traits
  - Work with genetic markers for more informed breeding of complex traits
  - Handle large data sets for crop improvement programs
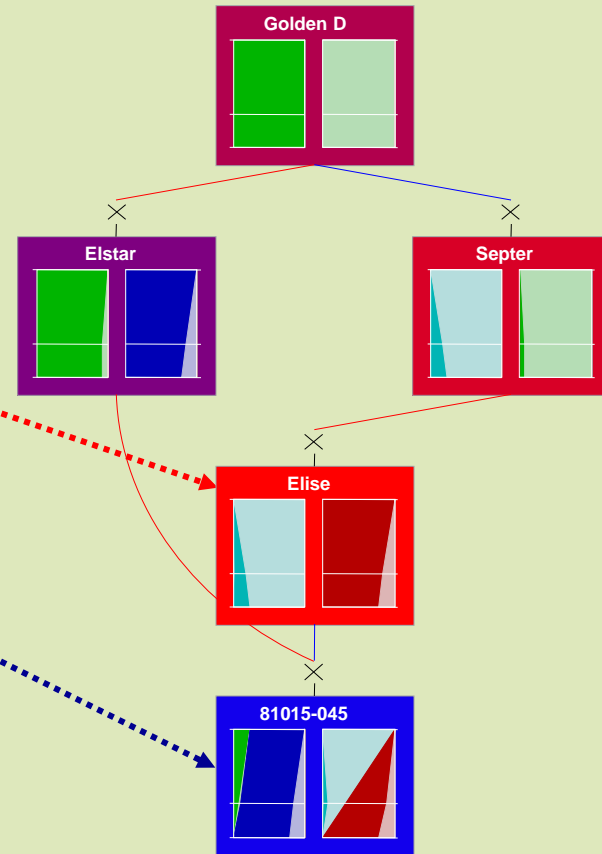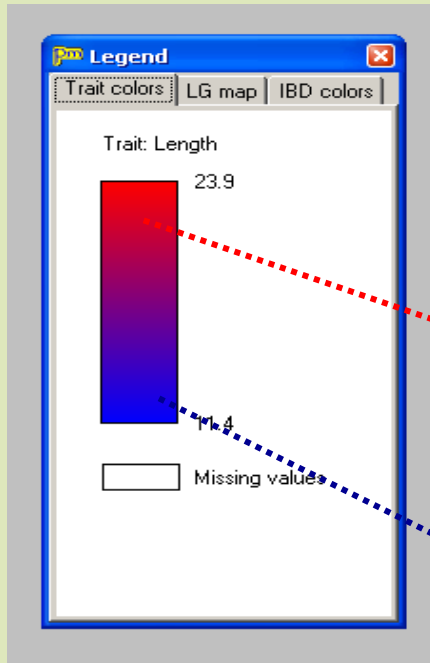
Some Pretty Diagrams

Identity-By-Descent (IBD)

Jonathan   X   **Golden**

Jonathan		Golden	
231	**237**	221	235
125	121	121	0
232	230	232	222

Septer   X   **Cox**

Septer		Cox	
231	221	219	219
125	121	127	121
232	232	230	230

Elise

221	219
121	121
232!	230

Chromosome map:

Position	Marker
0.0	XH04χ06
7.4	E34M59–300–1 / XH02β07
22.2	E35M52–243–4 / XH02α10
25.6	E34M59–314–1
27.2	E32M47–126–9
38	**CH02c11**
39	**CH03d11**
43.5	E32M47–171–6
50.2	E35M52–224–5
55.4	E35M48–159–7
63	**COL**
70.4	E34M54–82–17

Elise - 219 descents from Cox
⇒ **I**dentical **B**y **D**escent
Elise - 221 descents from **GD**

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For quality of life

RosBREED
Enabling marker-assisted breeding in Rosaceae
www.rosbreed.org

Visualizing Phenotypic Data

Visualizing Genotypic Data

Linkage group inherited from mother father

Elise

Color indicates founder from which allele is inherited

Locus positions

Width indicates probability of founder alleles

0 — Locus1
5 — Locus2
10 — Locus3
15 — Locus4
20 — Locus5

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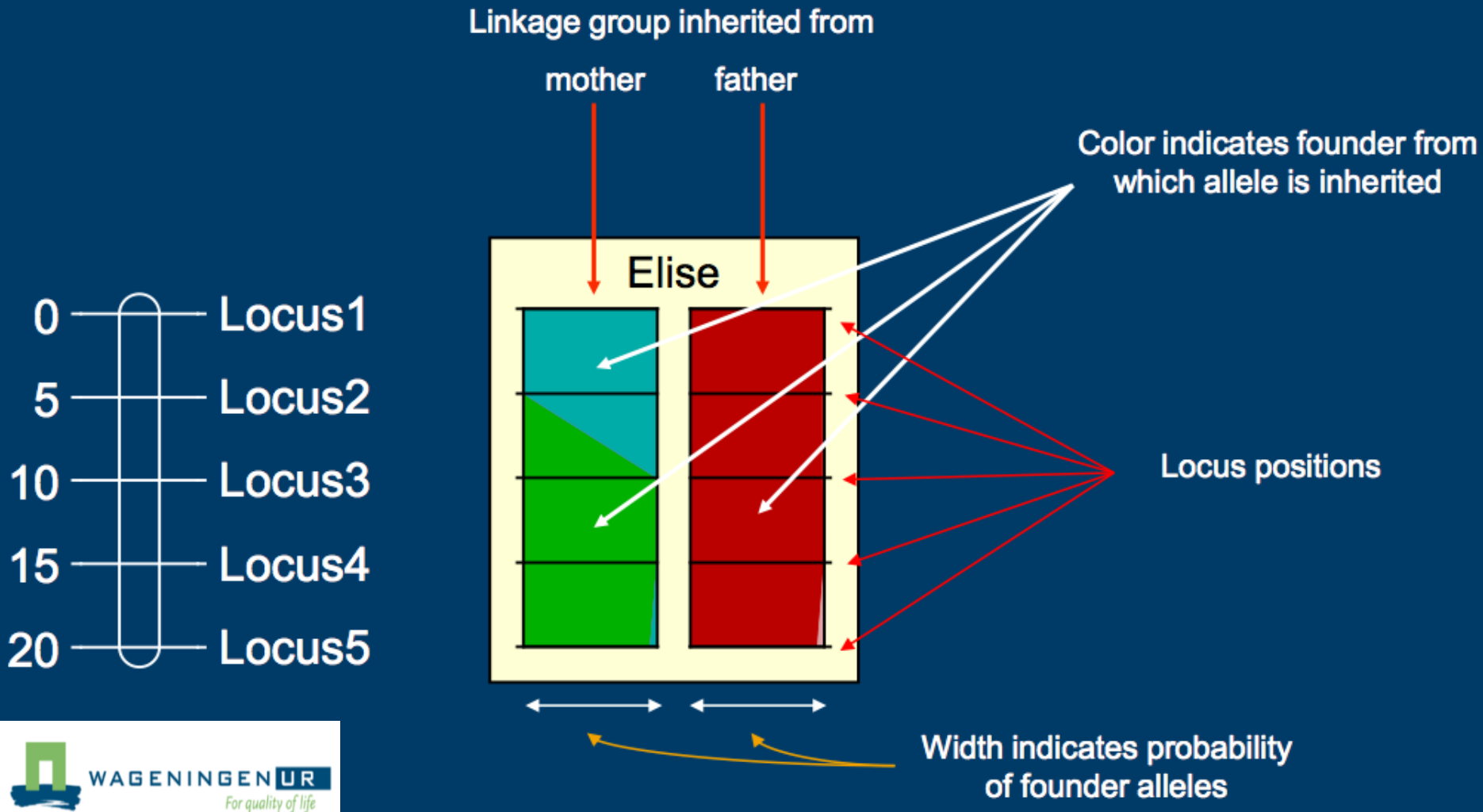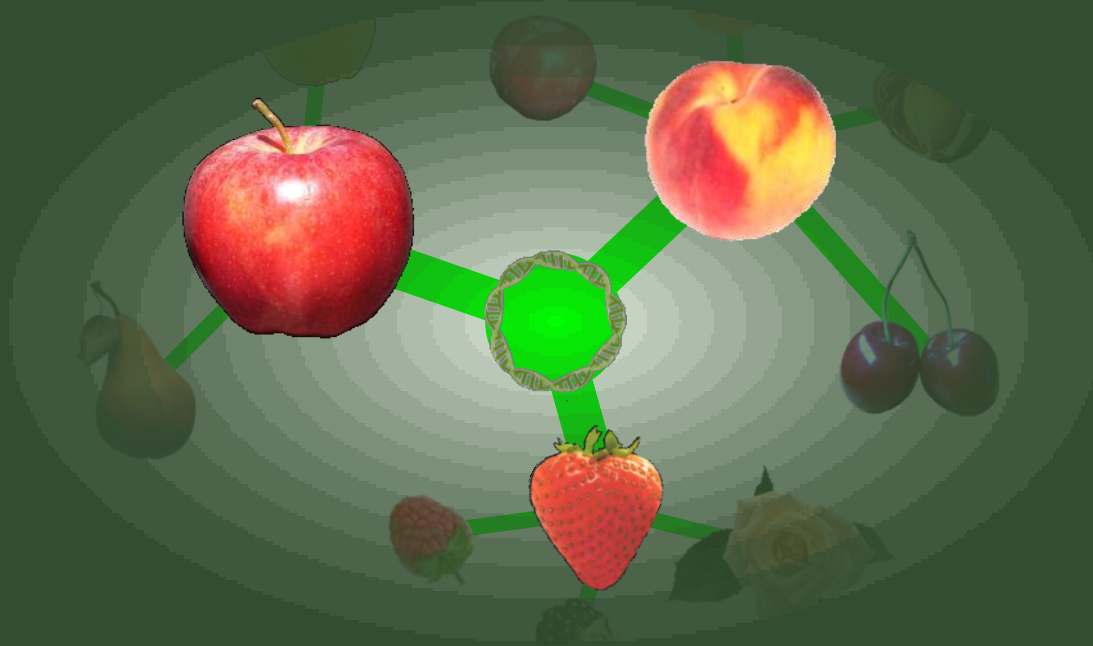
Visualizing Genotypic Data
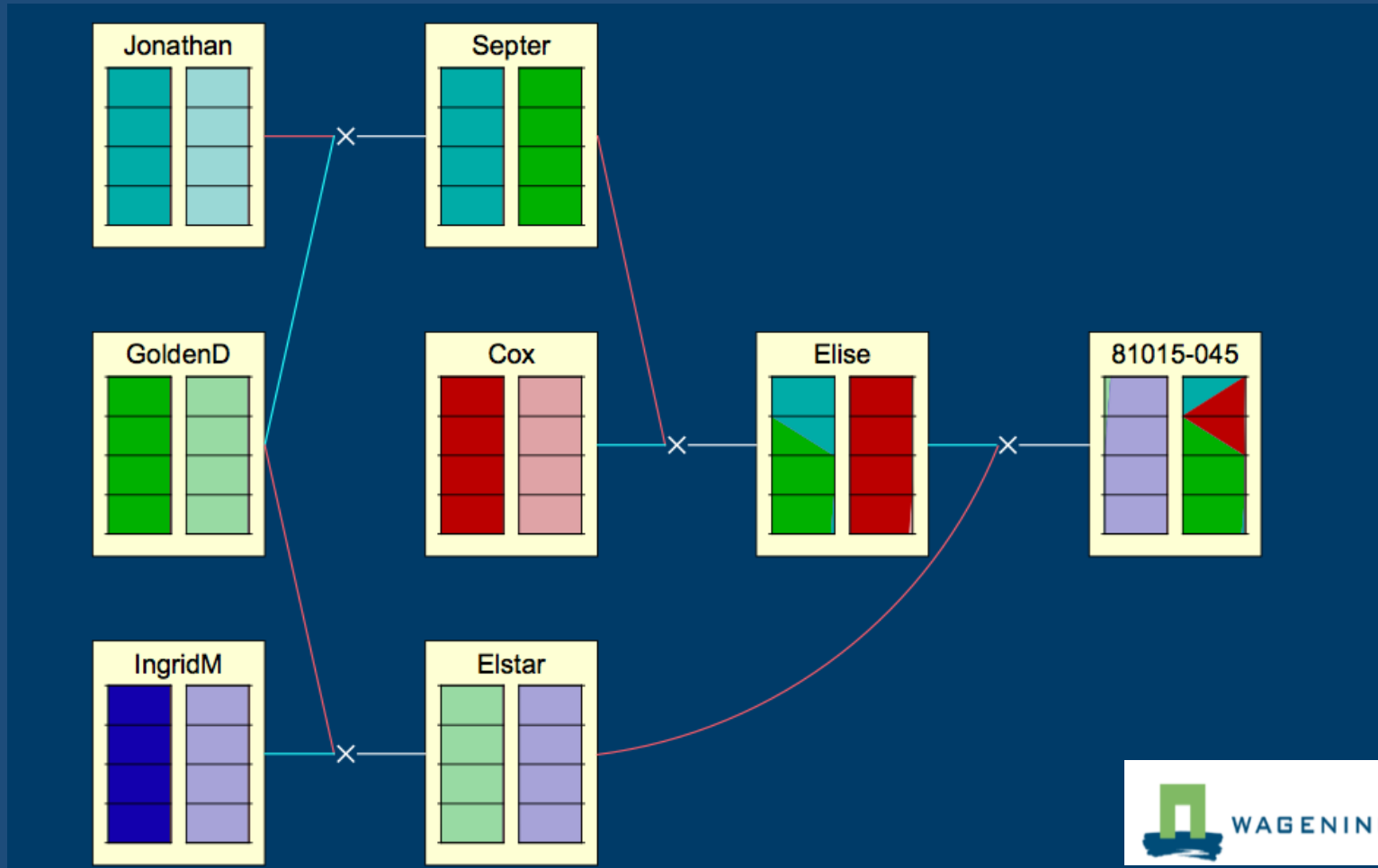
How Can I Get Pedimap?

How Can I Get Pedimap?

- Step 1: Go to website

  www.plantbreeding.wur.nl/UK/software_pedimap.html

- Step 2: Read webpage – interesting stuff!

- Step 3: See below first paragraph ⟶

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Pedimap is available for the Windows platform (all 32-bit or 64-bit versions, Windows98 up to Windows7). Pedimap can be downloaded here.

"Pedimap can be downloaded **here**"

How Can I Get Pedimap? cont'd

Step 4 **Step 5** **Step 6**

Pedimap

Software for visualization of genetic and phenotypic data in pedigrees

Download & Installation instructions

You can download Pedimap by clicking this link. Installation is simple: just copy all files from the downloaded zip file to any directory on your PC.

How to obtain a licence

Pedimap can be used, with limitations, without a license. However, a free, personal license can be obtained here. The license file will be send to you by email. To unlock all Pedimap features, simply copy the license file to the same directory where you installed Pedimap and restart the program.

www.plantbreeding.wur.nl/UK/software_pedimap.html

How Can I Get Pedimap? cont'd

Pedimap

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Step 7 (final)

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Acknowledgements

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Questions?