ECPGR
15 January 2020
JKI – Dresden - Germany

Presentation of two European project concerned by berry fruits

GoodBerry
&
EUBerry

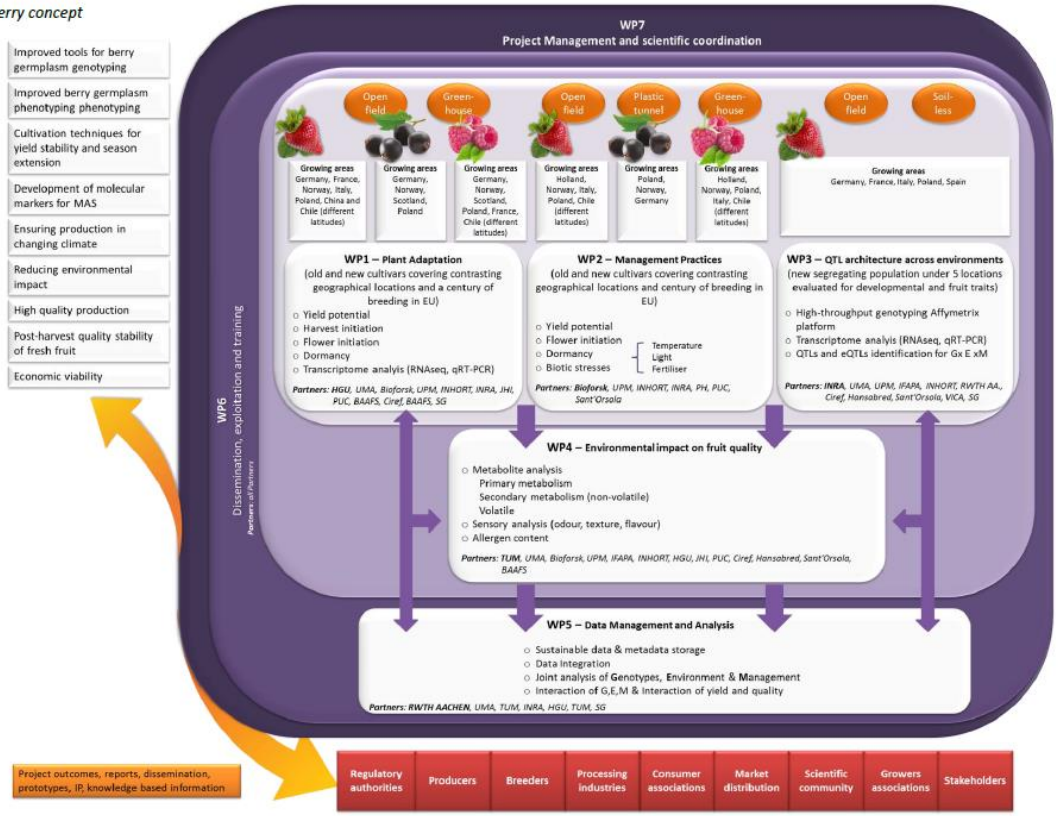
Béatrice Denoyes

GoodBerry

www.goodberry-eu.eu

Improving the stability of high-quality traits of berry in different environments and cultivation systems for the benefit of European farmers and consumers

Figure 1. GoodBerry concept



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement Number 679303.

GoodBerry

Improving the stability of high-quality traits of berry in different environments and cultivation systems for the benefit of European farmers and consumers

WP 3

Unravel genetic architecture of agronomical traits that interact with environment and culture management

Results highlights the pangenome, the different response to different environment (plasticity)

Béatrice Denoyes

INRA

26/09/2019

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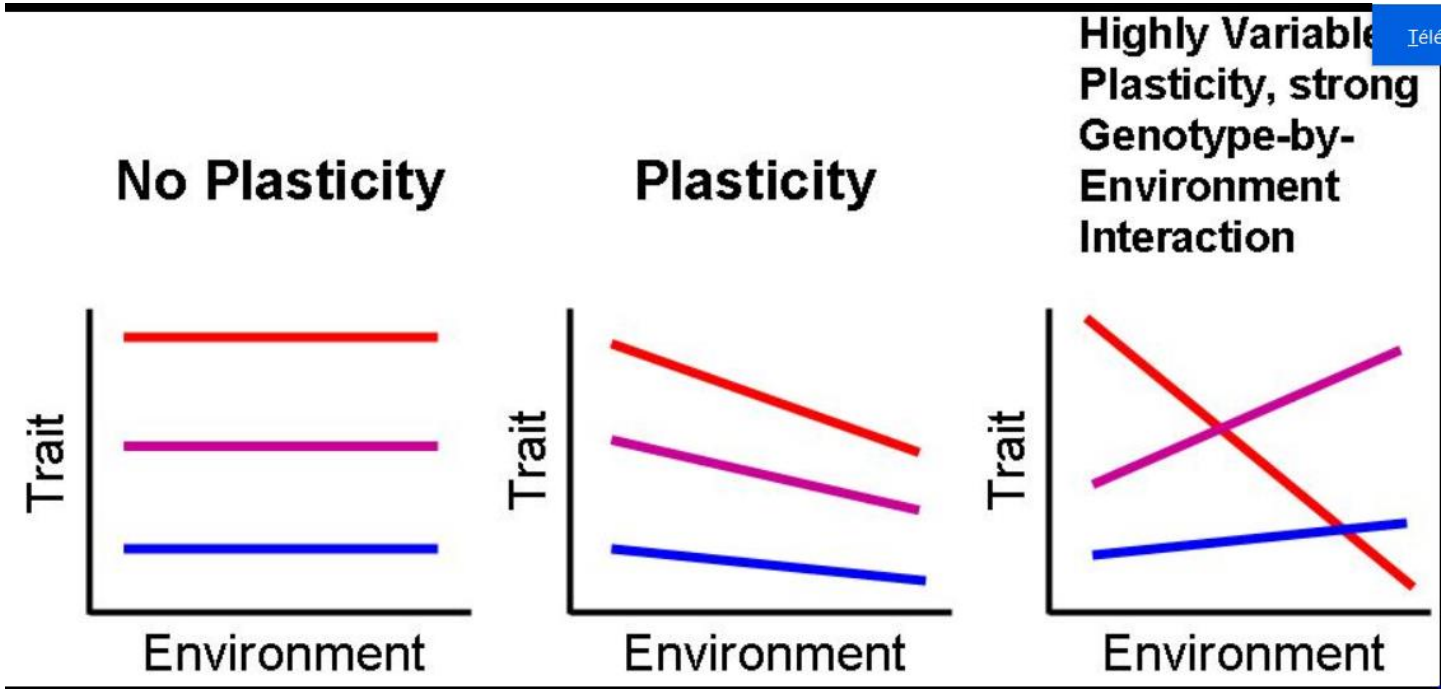
Phenotypic plasticity



AMMI method to study the G x E interaction

$$\cdots Y_{ger} = \mu + \alpha_g + \beta_e + \Sigma_n \lambda_n \gamma_{gn} \delta_{en} + \rho_{ger} \rightarrow$$

AMMI stability value : Value of the stability of the genotype in the different environments

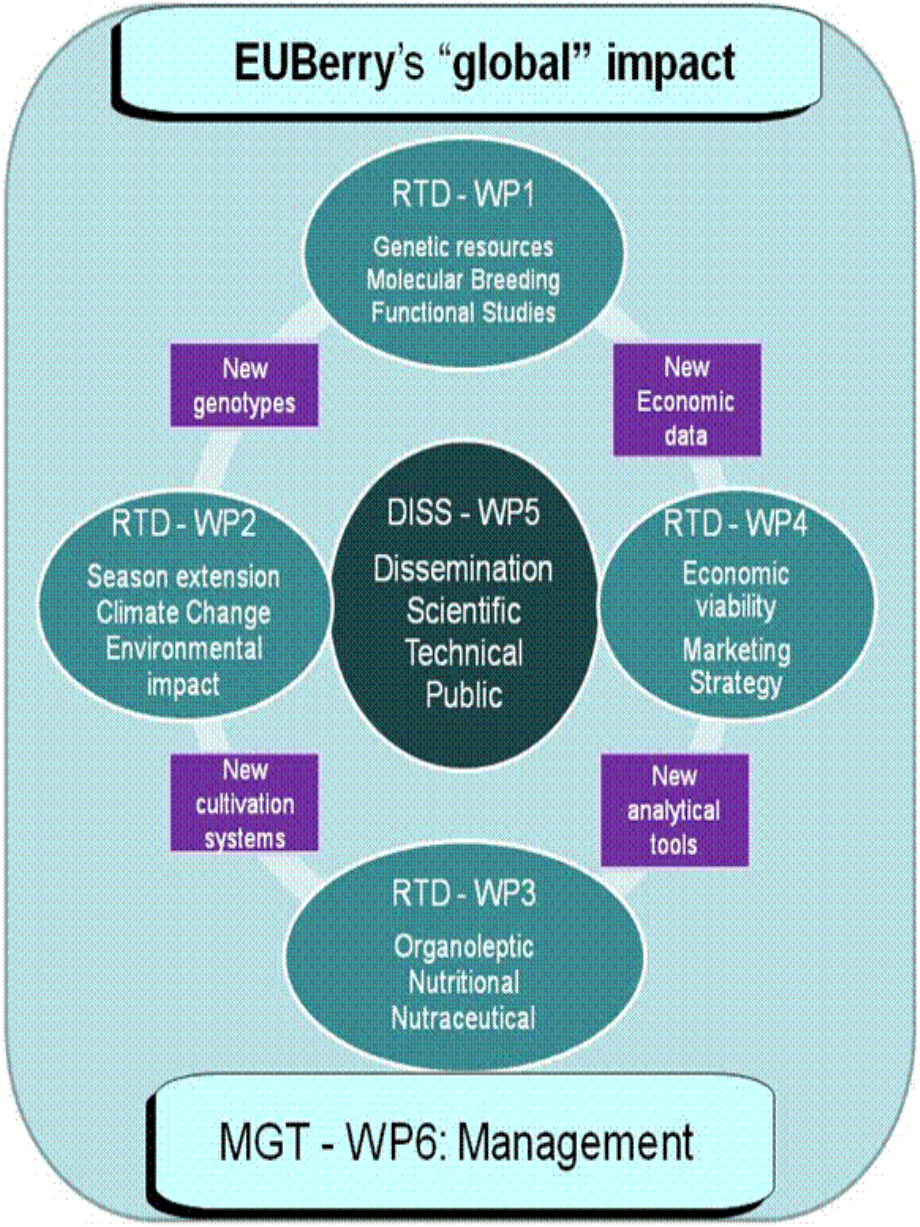
EUBerry – WP1

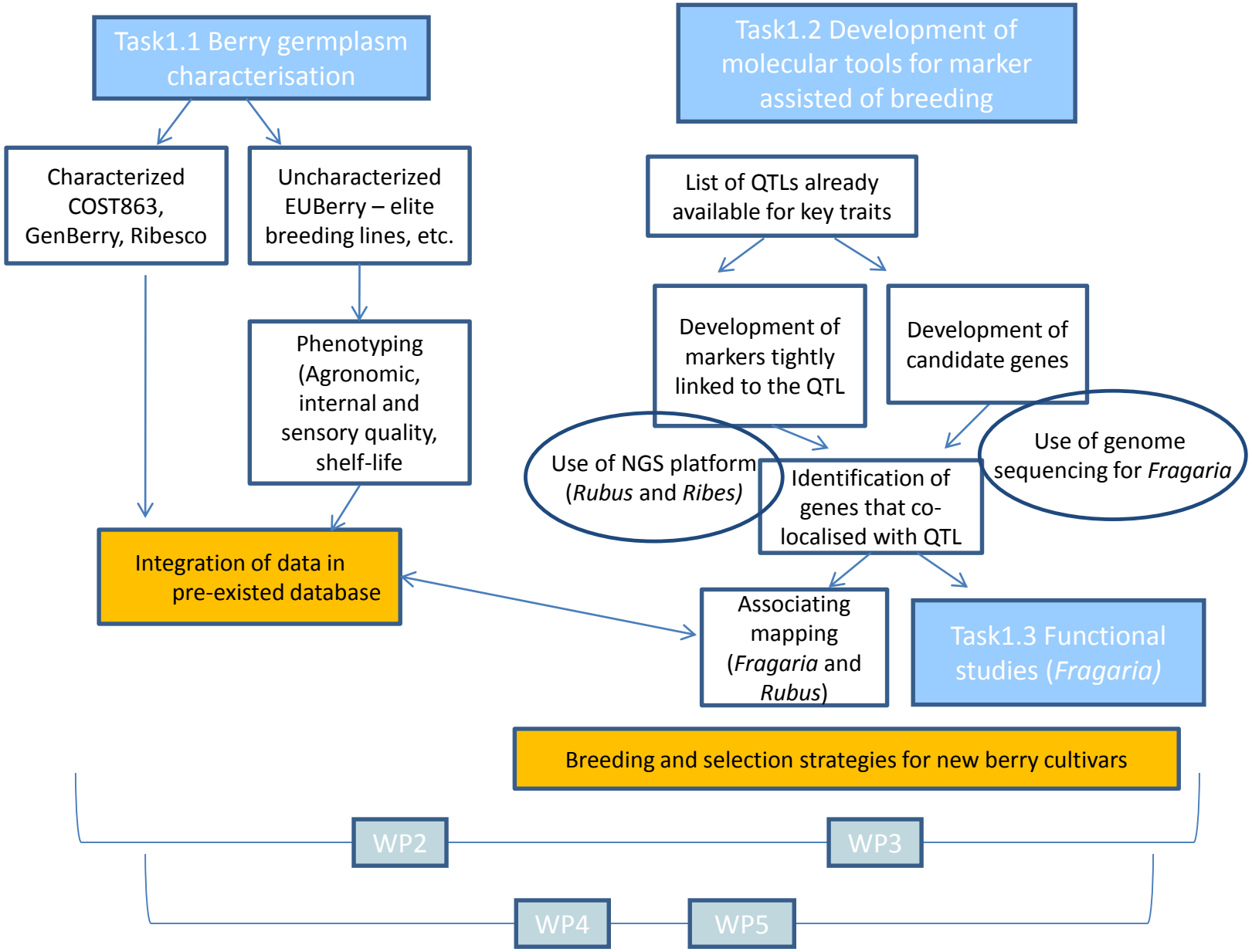
Improving berry varieties through the identification and utilisation of the best genetic resources

Leader – Rex Brennan (James Hutton Institute, Scotland, UK)

The James Hutton Institute

EUBerry


EUBerry's "global" impact
RTD - WP1
Genetic resources
Molecular Breeding
Functional Studies
New genotypes
New Economic data
RTD - WP2
Season extension
Climate Change
Environmental impact
DISS - WP5
Dissemination
Scientific
Technical
Public
RTD - WP4
Economic viability
Marketing Strategy
New cultivation systems
New analytical tools
RTD - WP3
Organoleptic
Nutritional
Nutraceutical
MGT - WP6: Management


Task1.1 Berry germplasm characterisation
Characterized COST863, GenBerry, Ribesco
Uncharacterized EUBerry – elite breeding lines, etc.
Phenotyping (Agronomic, internal and sensory quality, shelf-life
Integration of data in pre-existed database
Task1.2 Development of molecular tools for marker assisted of breeding
List of QTLs already available for key traits
Development of markers tightly linked to the QTL
Development of candidate genes
Use of NGS platform (Rubus and Ribes)
Identification of genes that co-localised with QTL
Use of genome sequencing for Fragaria
Associating mapping (Fragaria and Rubus)
Task1.3 Functional studies (Fragaria)
Breeding and selection strategies for new berry cultivars
WP2
WP3
WP4
WP5

Objectives and aims of WP1

- Evaluating, selecting and obtaining new genetic material of *Fragaria*, *Rubus, Ribes* and *Vaccinium* with improved adaptability to cultivation conditions and systems

- Identification of the best materials exhibiting enhanced fruit quality, incl. nutritional quality and nutraceutical value

Partners in WP1

- **P1 -** Marche Polytechnic University, Italy (Bruno Mezzetti)
  - **Phenotyping (F, V), Functional genomics (F)**
- **P2** – Research Institute of Horticulture, Poland (Edward Zurawicz)
  - Phenotyping (F, R, Ri), Genotyping (Ri)
- **P3** – James Hutton Institute, UK (Rex Brennan)
  - Phenotyping (R, Ri, V), Genotyping (R, Ri)
    - Subcontractor: East Malling Research (David Simpson)
      - Genotyping (F)
- **P4** – INRB, Portugal (Pedro Oliveira)
  - Phenotyping (R)
- **P5** – IFAPA, Spain (José Sánchez Sevilla)
  - Phenotyping (F), Genotyping (F), Functional genomics (F)
- **P6** – INRA, France (Beatrice Denoyes)
  - Phenotyping (F, R), Genotyping (F), Functional genomics (F)
    - Subcontractor 1 – CIREF (Phillipe Chartier)
    - Subcontractor 2 - Invenio (Marie-Noëlle Demene, Jean-Jacques Pommier
- **P7** – MTT, Finland (Saila Karhu)
  - Phenotyping (Ri)
- **P8** – Bioforsk, Norway (Rolf Nestby)
  - Genotyping (F)
- **P10** – Geisenheim Research Centre, Germany (Erika Krüger-Steden)
  - Phenotyping (F, R, Ri)
- **P12** - JKI Quedlingburg (Detlef Ulrich)
  - Phenotyping (F, R, Ri)

Projected outputs from WP1

- Integrated sets of characterised germplasm, both cultivars and advanced breeding lines, for *Fragaria*, *Rubus*, *Ribes* and *Vaccinium* across the (3 main) climatic zones within the EU
- Full development of phenotypic databases beyond the information collected in existing GENBERRY and RIBESCO databases, to incorporate elite pre-commercial germplasm from EU-based breeding programs.
- Genotyping protocols for strawberry, raspberry and currant based partly on genome-wide sequencing approaches.
- Identification of QTLs and some key genes underlying important developmental and quality traits in strawberry, raspberry and currant
- Markers linked to key traits in strawberry, raspberry and currant for subsequent deployment by breeders in downstream breeding programs.
- Validation of functionality of genes for flowering and fruit quality in strawberry

Conclusion

GoodBerry and EUBerry did not generated database or excel files that merge description of materials.