



Pre-breeding strategies for obtaining new resilient and added value berries

SENSORY QUALITY AND CONSUMER ACCEPTANCE OF BERRIES: Towards satisfied berry consumers – an introduction to activities

Saila Karhu, Natural Resources Institute Finland (LUKE)

WORKSHOP Advancing Berry Breeding: From Phenotyping to Genomic Innovation

02-03 April 2025, Ancona, Italy



The BreedingValue project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000747.

BreedingValue Work Package 4

Fruit quality attributes for European berry GenRes emphasized by consumer responses (“Sensory Quality”)

- The demand of berries is mainly based on their sensorial quality
- The decisions of purchasing consumers are affected by visual and other sensory parameters
- A key requisite for new germplasm arrival and successful permanence on the market is
 - a positive and consistent market
 - consumer acceptance of their quality
- Breeders usually know the needs of farmers
- Consumer needs and preferences
 - change and evolve over time
 - not easy to assess



BreedingValue Work Package 4 (“Sensory Quality”)

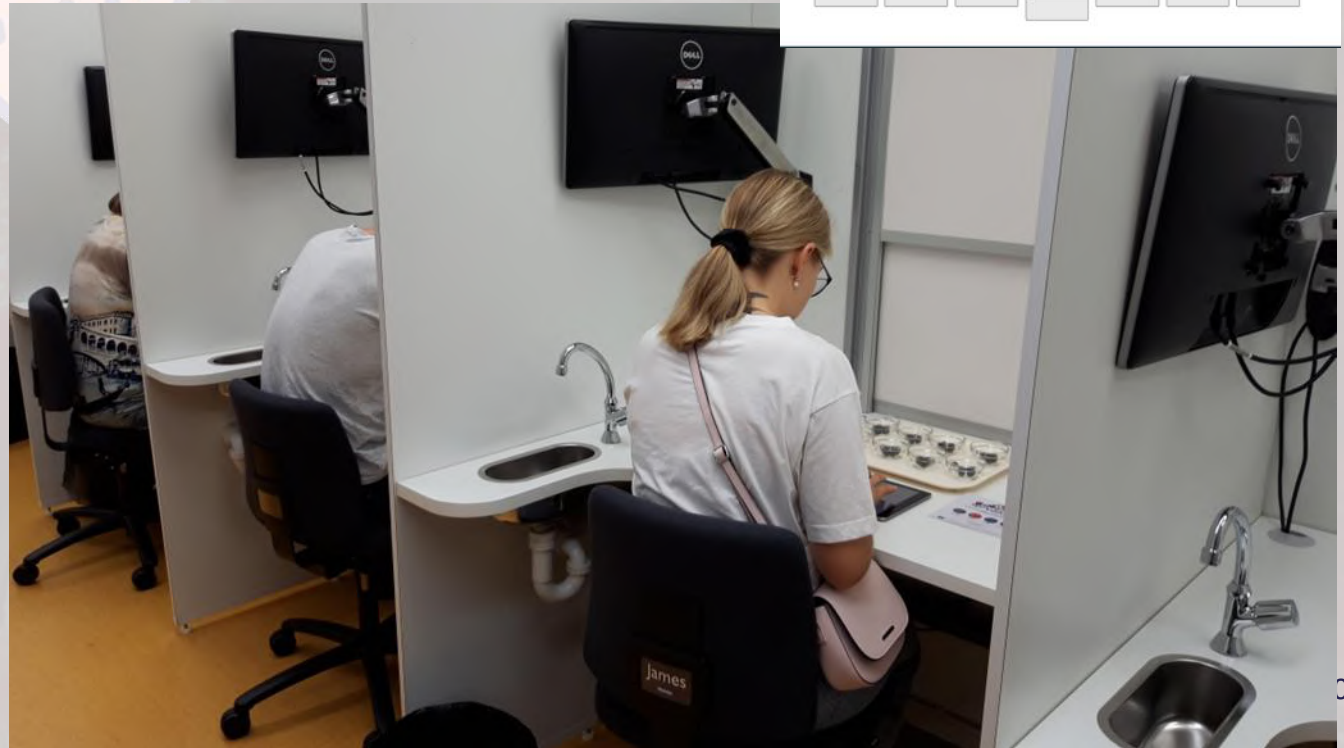
- The WP4 was dedicated to make an up-to-date scenario of desires and aspirations of consumers, as related to quality of berries
- *On-line surveys* on consumer attitudes: food chain associates, consumers
- *Interviews and discussions*: Berry experts and stakeholders
- Berry varieties are developed to local / international / both / markets: quality needs can be different in different regions, for different products
- Critical sensory factors to be defined, even acknowledging differences across different European regions



BreedingValue Work Package 4 (“Sensory Quality”)

Testing consumer willingness to pay and preferences

- To find out what sensory quality attributes consumers value in berries
- External quality: without tasting
- Edible quality: tasting
- Critical sensory factors as related to willingness to pay
- ... Results to be compared with fruit chemical quality, and with the results of trained sensory panels



Taaksesi pöydälle on asetettu marjapakkauksia, siirry arvioimaan **kyseistä** näytettä. Tarkasta näytteen numero lomakkeelta.
Nouse katselemaan pakkauksessa olevia marjoja samalla tavalla kuin olisit kaupassa.

Perustuen ulkonäköön, kuinka paljon olisit valmis maksamaan tästä lajikkeesta verrattuna tavanomaisesti ostamaasi lajikkeeseen?

Näyte: BC111

Tavanomaista vähemmän	Normaalin hinnan	+10%	+25%	+75%	+100%
1	2	3	4	5	6

Seuraava

Kuinka miellyttävänä pidät seuraavia marjojen ulkonäköön liittyviä ominaisuuksia?

Näyte: BC111

Ulkonäkö yleisesti

Erittäin tyytymätön	Kohtalaisen tyytymätön	Hieman tyytymätön	Ei tyytyväinen eikä tyytymätön	Hieman tyytyväinen	Kohtalaisen tyytyväinen	Erittäin tyytyväinen

Näyte: BC111

Marjojen koko

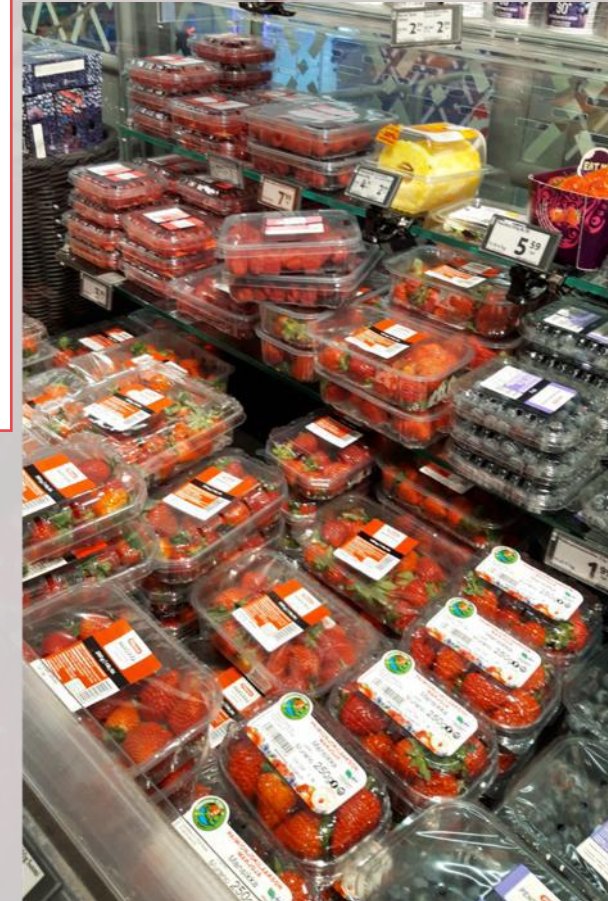
Erittäin tyytymätön	Kohtalaisen tyytymätön	Hieman tyytymätön	Ei tyytyväinen eikä tyytymätön	Hieman tyytyväinen	Kohtalaisen tyytyväinen	Erittäin tyytyväinen



BreedingValue Work Package 4 (“Sensory Quality”)

How the sensory quality of berries is usually described?

- Breeders mainly direct descriptions to farmers and trade (fruit appearance, post harvest quality)
- Random samples from the internet of sensory descriptions of strawberry fruit traits related to eating :*Firm, High brix, Excellent taste, Juicy, Very pleasant aroma, Aromatic strawberry fragrance, Fruity aroma, Pleasant aroma, Very good, Outstanding taste, Outstanding quality, Tasty, Excellent flavour ...*
- For comparison:
- potatoes,
- wines, etc.



Know Your Potatoes



RED

Starch Content:
Low (about 16 percent by weight)

Flavor:
Mineral-y, sweet

Cooked Texture:
Firm, creamy

How to Cook:
Braise; boil for salads, soups, and stews



YUKON GOLD

Starch Content:
Medium (16 to 18 percent by weight)

Flavor:
Buttery, sweet

Cooked Texture:
Velvety

How to Cook:
Roast, mash, fry



RUSSET

Starch Content:
High (at least 20 percent by weight)

Flavor:
Earthy, mild

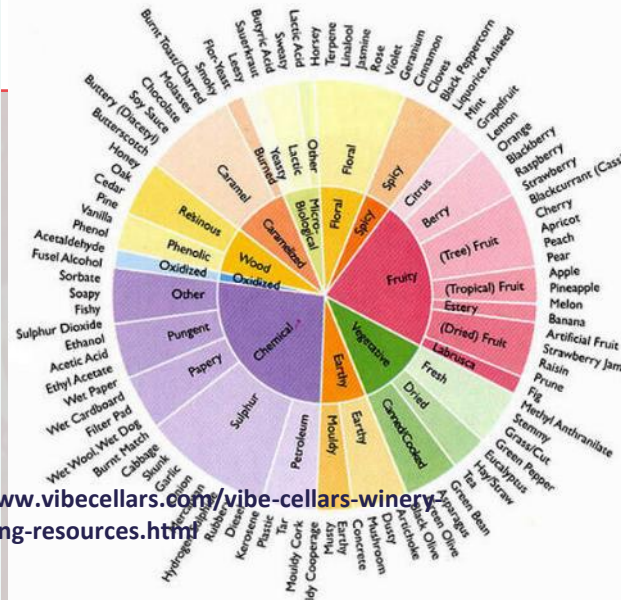
Cooked Texture:
Dry, fluffy

How to Cook:
Bake, roast, mash, fry

The Aroma Wheel

showing first, second and third tier terms, after Noble *et al.*

(© American Society of Enologists and Viticulturists)



<https://www.vibecellars.com/vibe-cellars-winery-wine-tasting-resources.html>

<https://swipefile.com/simple-visual-text-potato-guide>



BreedingValue Work Package 4 (“Sensory Quality”)

How to describe the sensory quality of strawberry, raspberry and blueberry by using consistent methods?

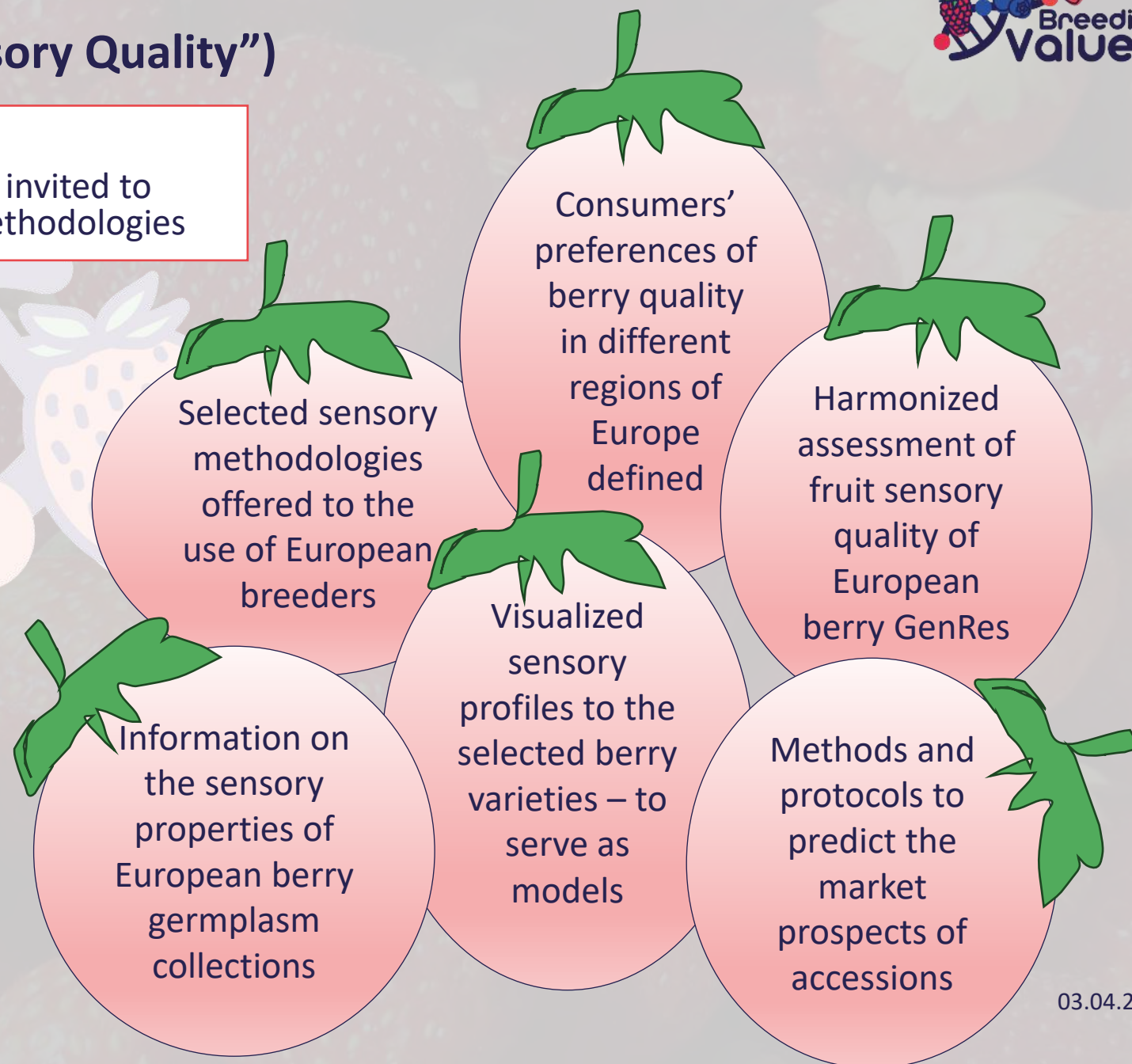
To harmonize the assessment and descriptions of fruit sensory quality of European berry GenRes

- List of attributes : *lexicons*
- *Trained panels* to assess berries
- To create *sensory profiles* to the varieties of different berry species (computing models)
- To *visualize* sensory profiles (models)
- To serve as models for future use



BreedingValue Work Package 4 (“Sensory Quality”)

- Open Call # 4: Breeders outside the project were invited to participate, to learn, test and use the sensory methodologies



BreedingValue Work Package 4 (“Sensory Quality”)

- Open Call # 4: Breeders outside the project were invited to participate, to learn, test and use the sensory methodologies

