



NIBIO

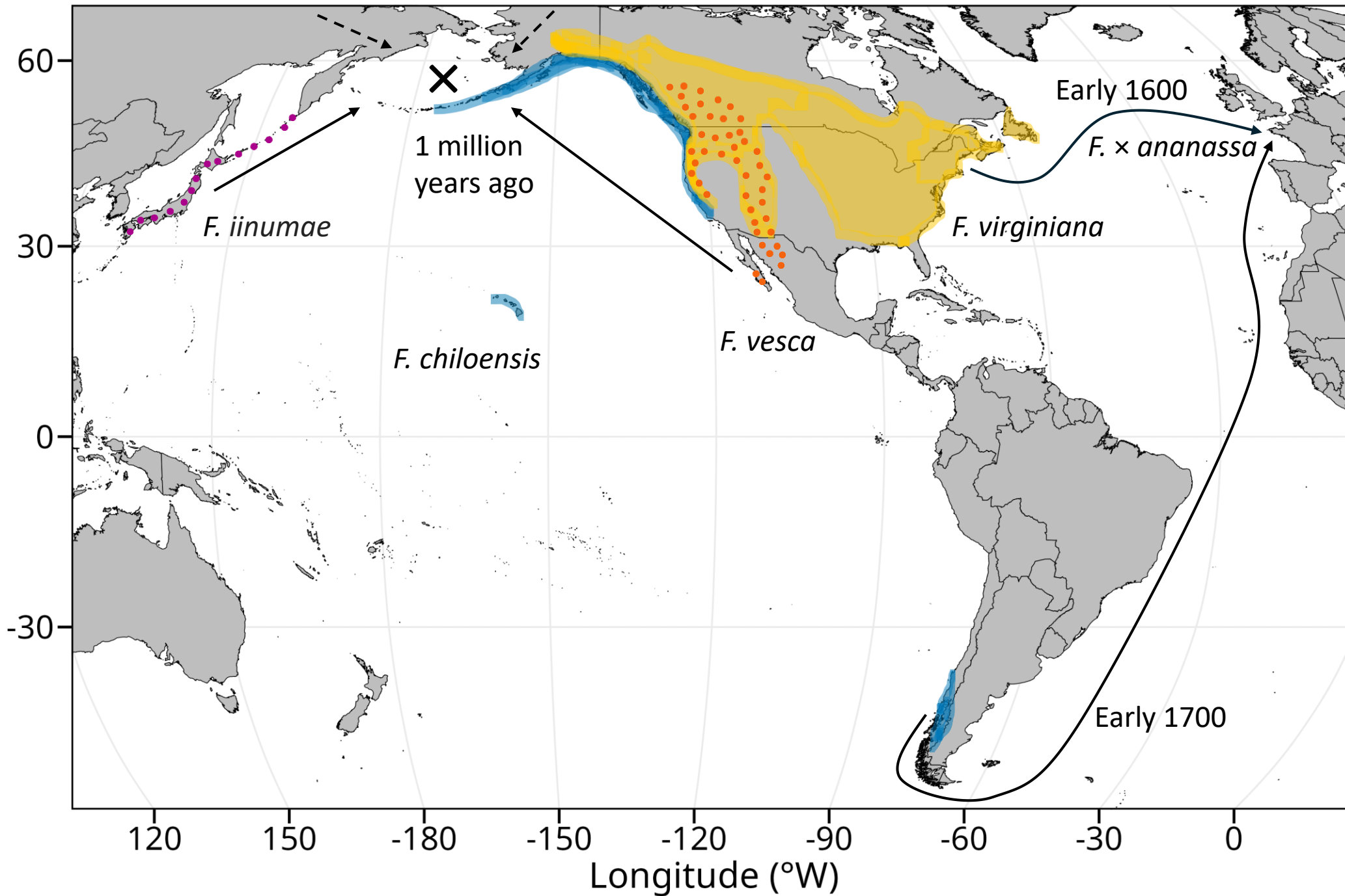
NORWEGIAN INSTITUTE OF
BIOECONOMY RESEARCH

Tracing strawberry population structures: The legacy of domestication and intertwined breeding

Jakob Junkers • BreedingValue workshop • 2025



Latitude (°N)

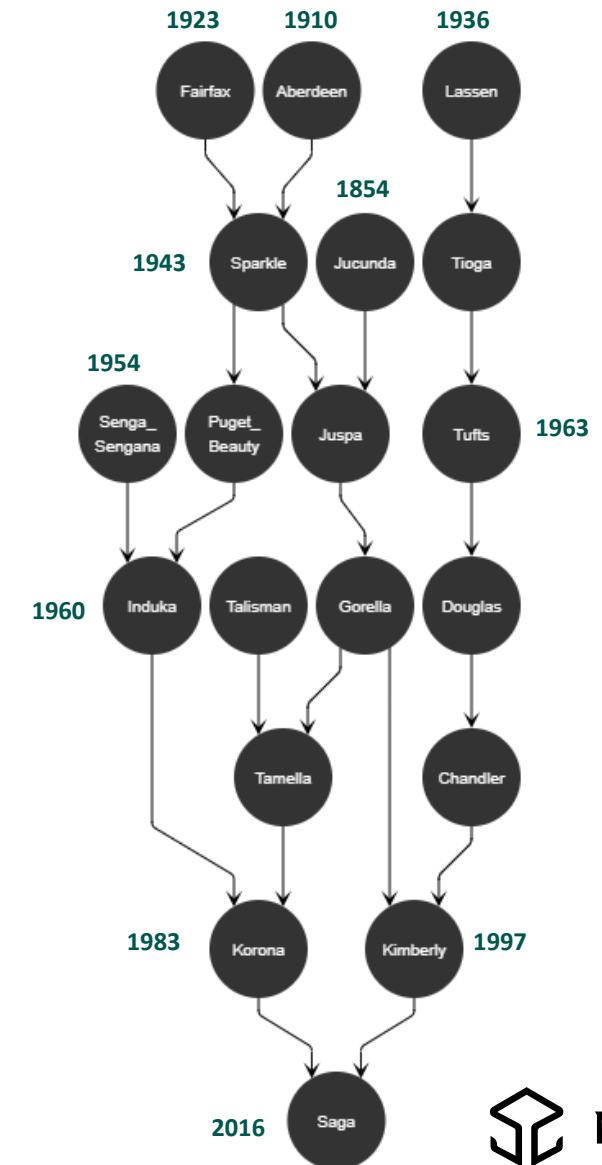


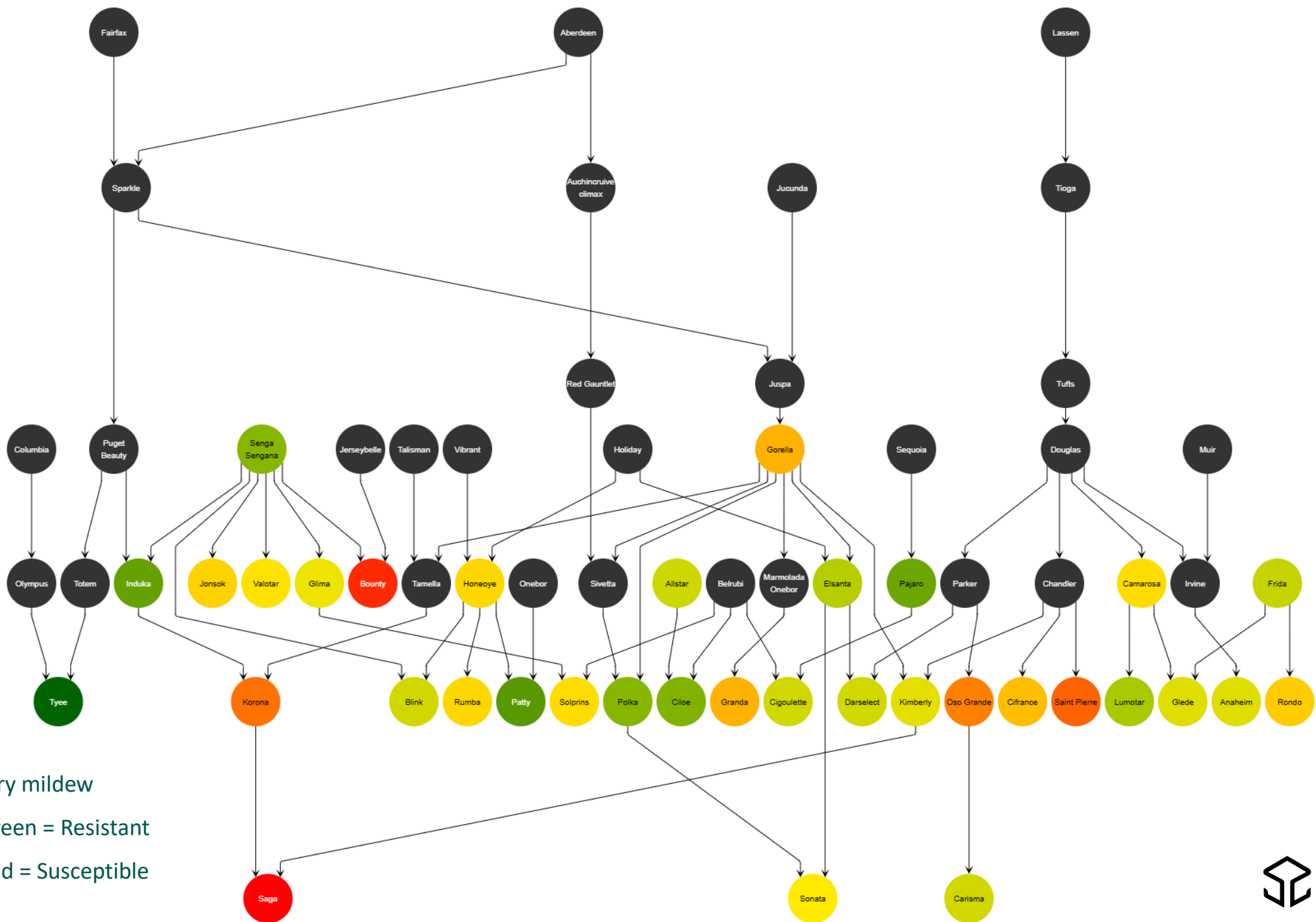
- High diversity is important to cope with future challenges
- The original object was to determine if allelic diversity has been lost during breeding
- The current main focus has been on data curation
- Part of the EU project BreedingValue, a collaboration between several breeding institutions and private companies in Europe
- Cultivars were genotyped using the 50K SNP strawberry genotyping array
- Began with 4700 accessions, after filtering: 1500 (770 cultivars, 306 wild)



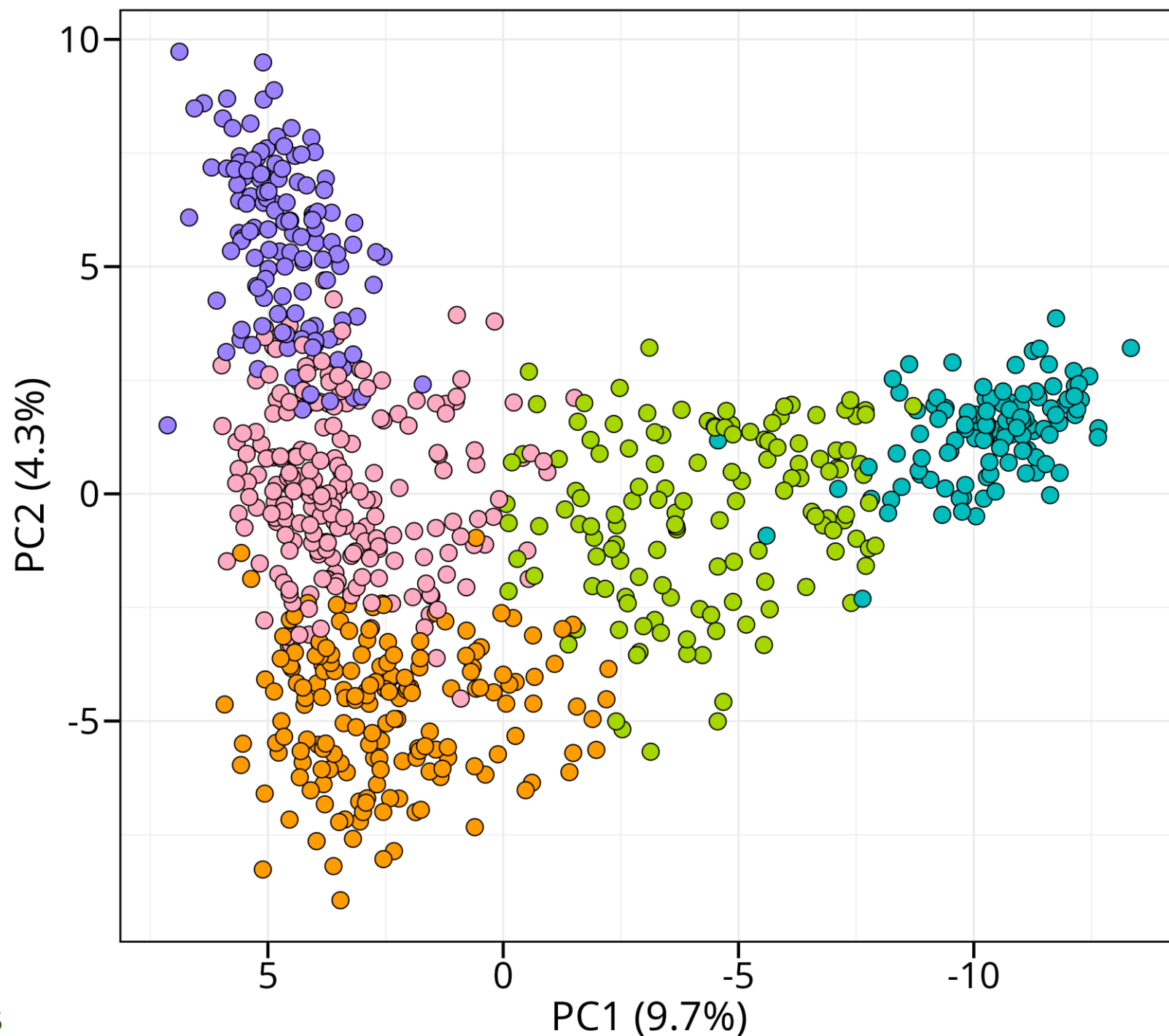
Duplicate and true-to-type identification

- Well preserved pedigree records
- 329 cultivars were true-to-type
- 212 cultivars were not true-to-type
- 148 of them were confirmed as mix-ups
- Important for genebanks and breeders





Domesticated *F. × ananassa* cultivars



Ancestry

- Old European
- Modern European
- Northern USA
- Southern USA
- Mediterranean

F. virginiana

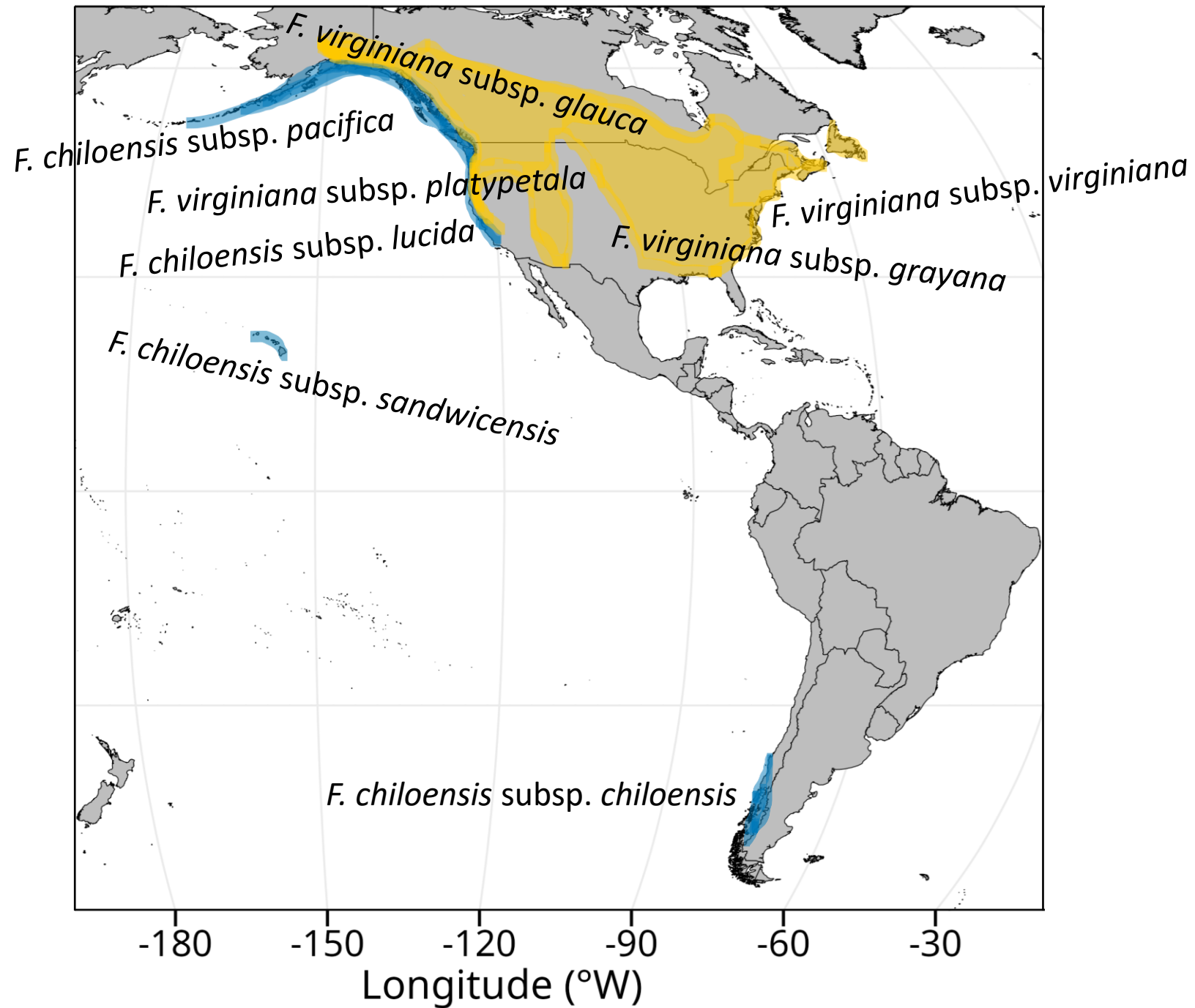
F. chiloensis



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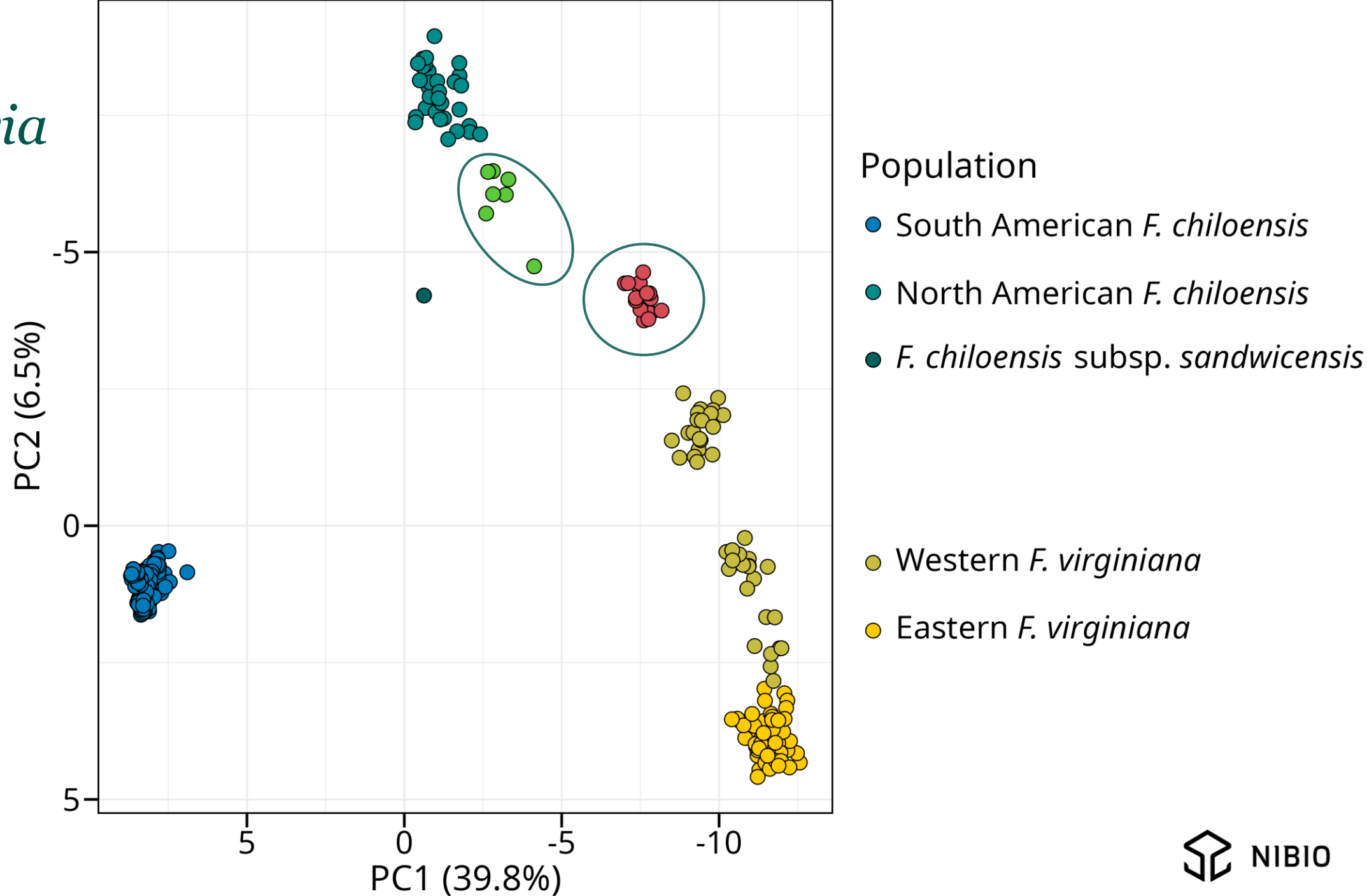


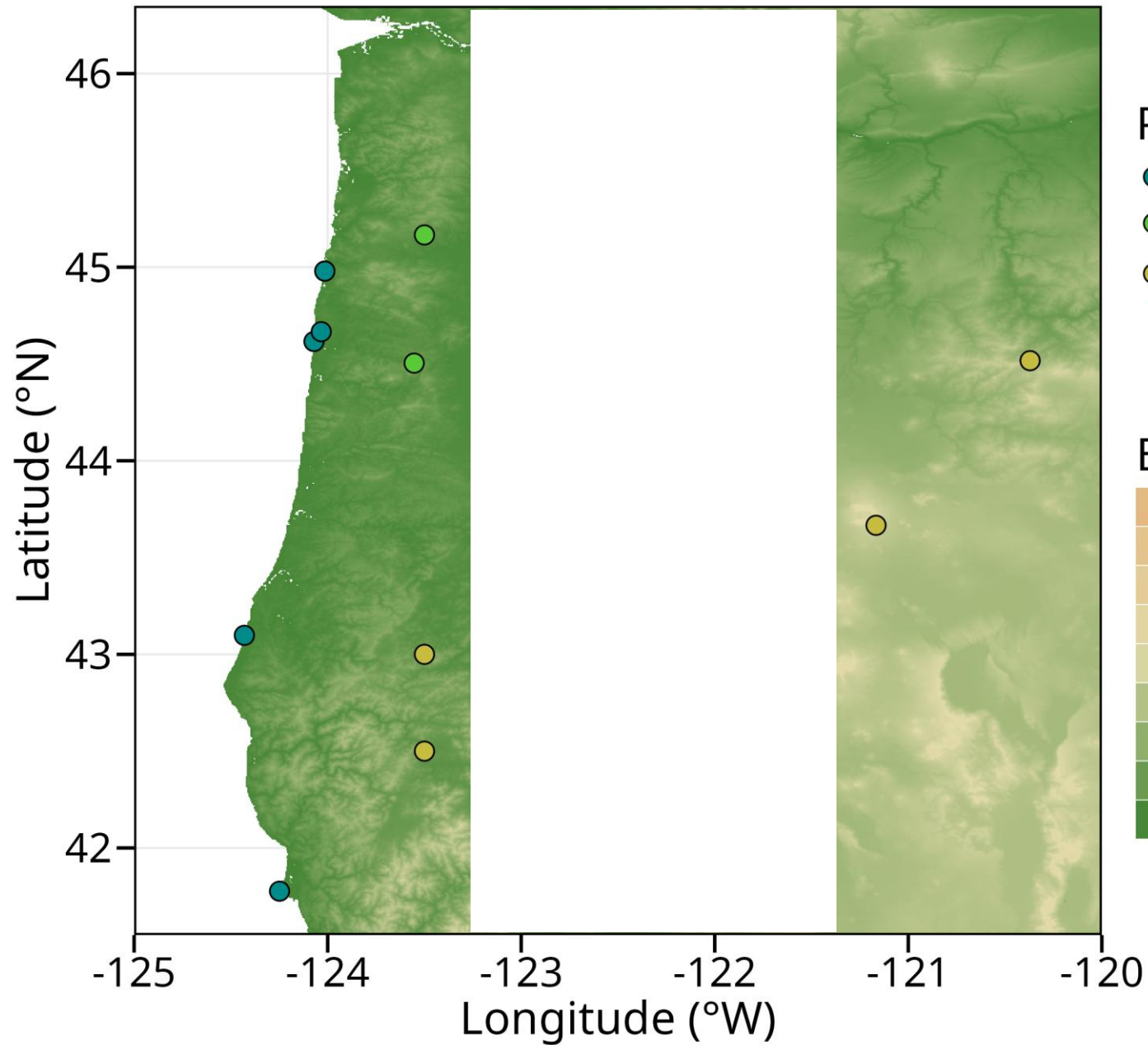
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● *F. chiloensis*
● *F. virginiana*

Wild
Fragaria
species

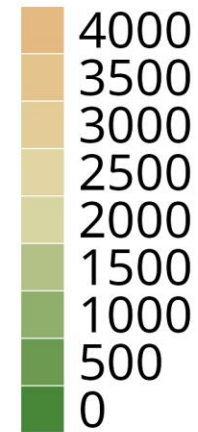




Population

- North American *F. chiloensis*
- F. × ananassa* subsp. *cuneifolia*
- Western *F. virginiana*

Elevation (m)

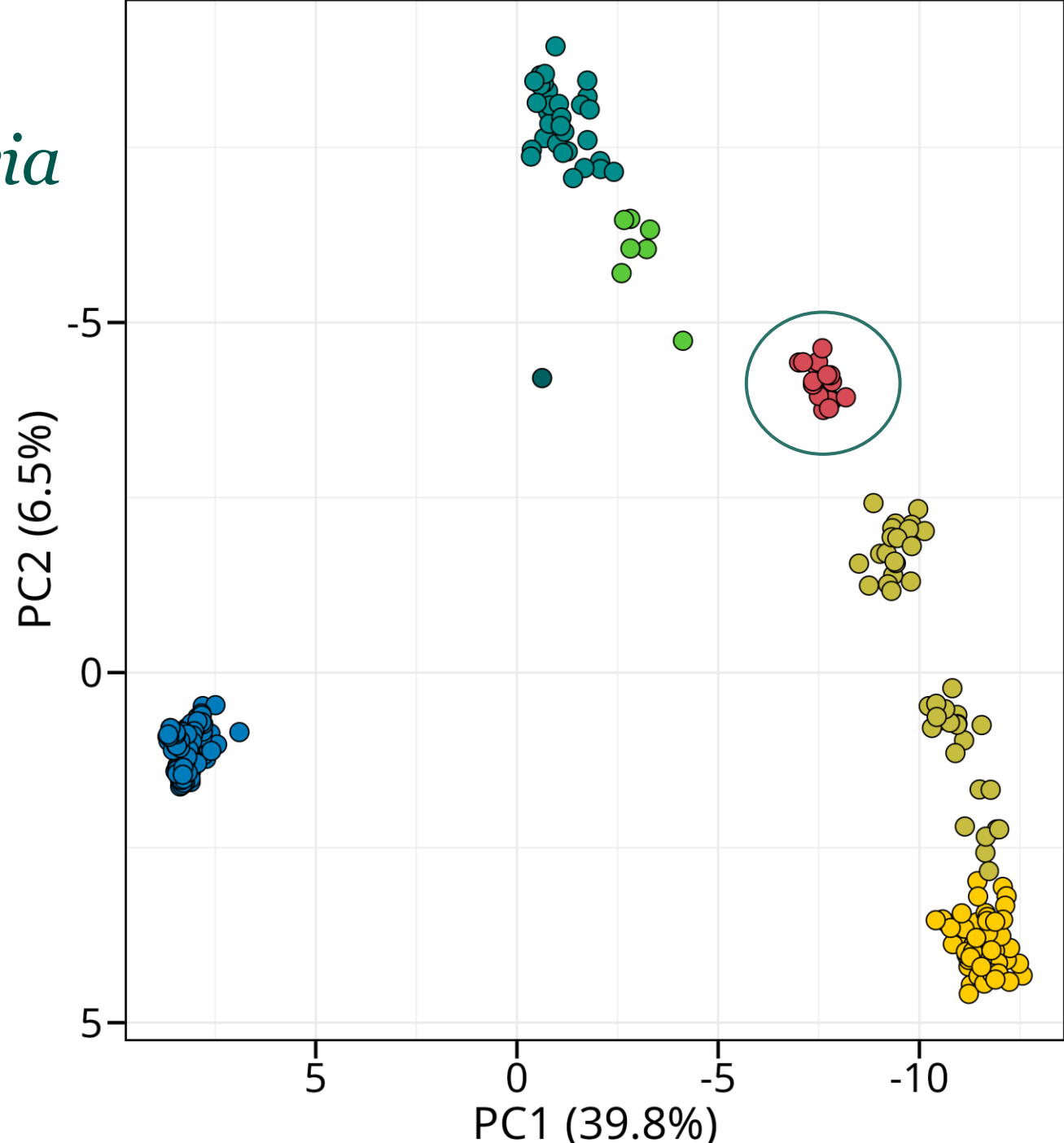


Cascade Mountains,
Oregon, USA

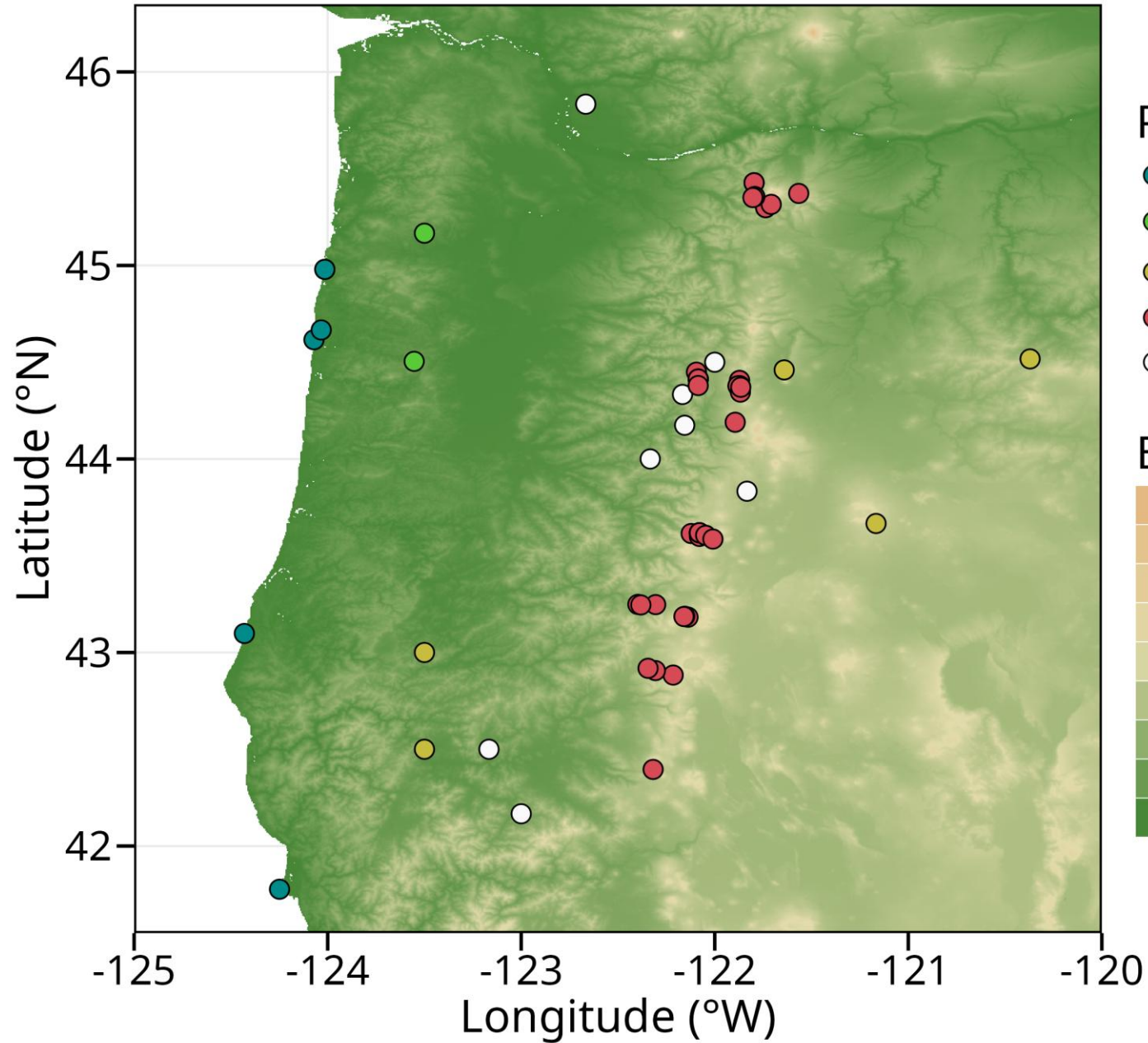
F. × ananassa ssp. *cuneifolia*



Wild
Fragaria
species



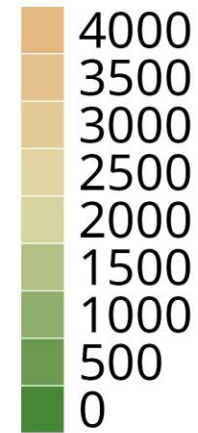
- Population
- South American *F. chiloensis*
 - North American *F. chiloensis*
 - *F. chiloensis* subsp. *sandwicensis*
 - *F. × ananassa* subsp. *cuneifolia*
 - Western *F. virginiana*
 - Eastern *F. virginiana*



Population

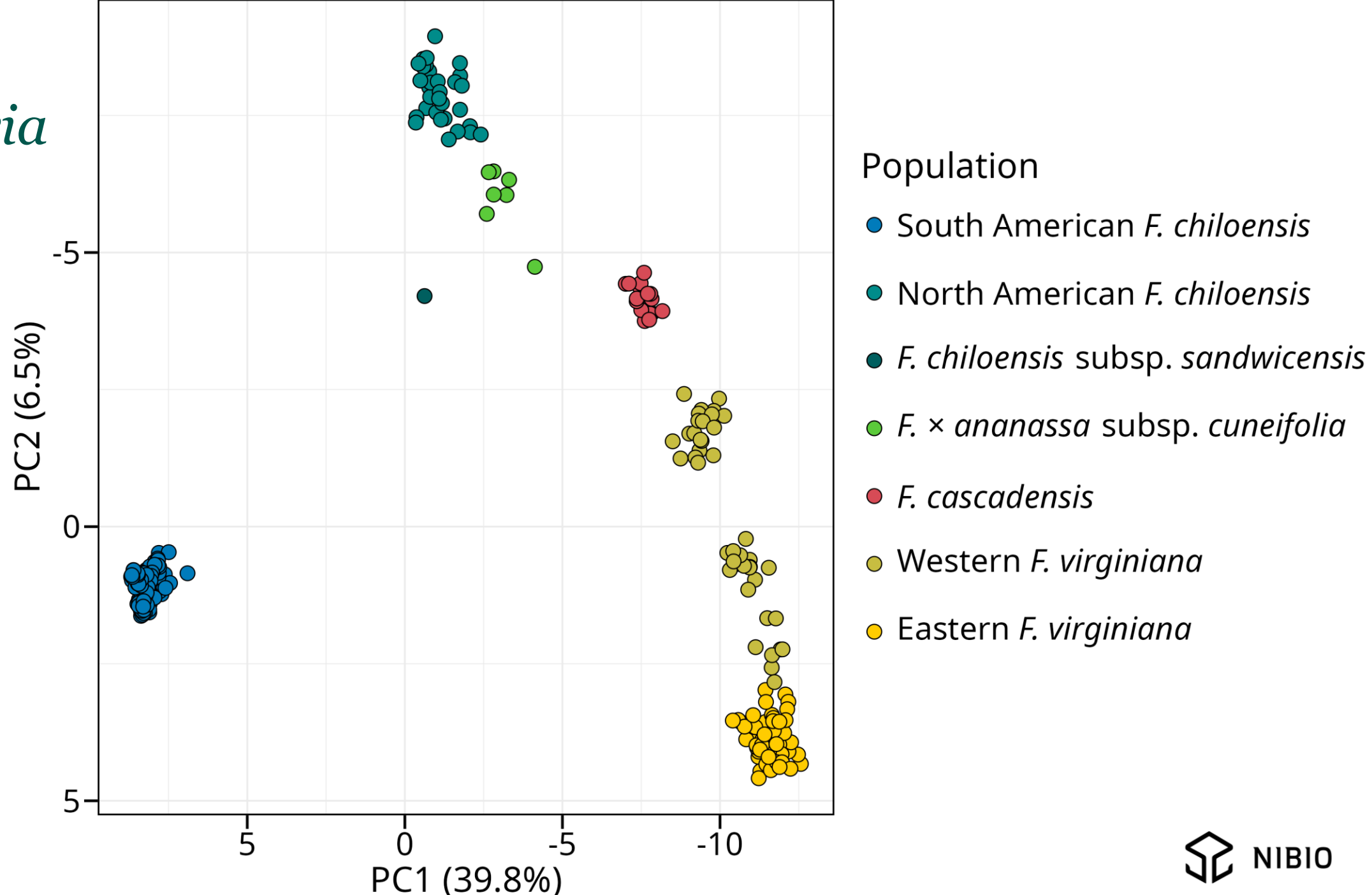
- North American *F. chiloensis*
- F. × ananassa* subsp. *cuneifolia*
- Western *F. virginiana*
- F. cascadiensis*
- F. cascadiensis* (reclassified)

Elevation (m)



Cascade Mountains,
Oregon, USA

Wild
Fragaria
species





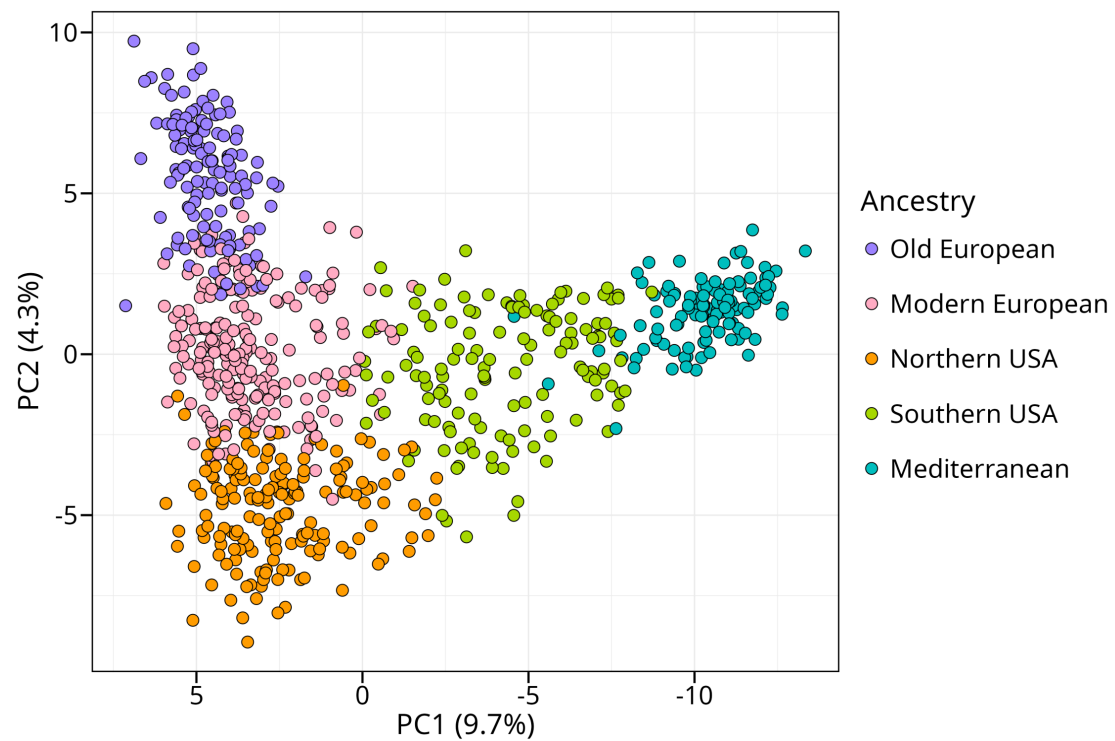
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F. cascadiensis

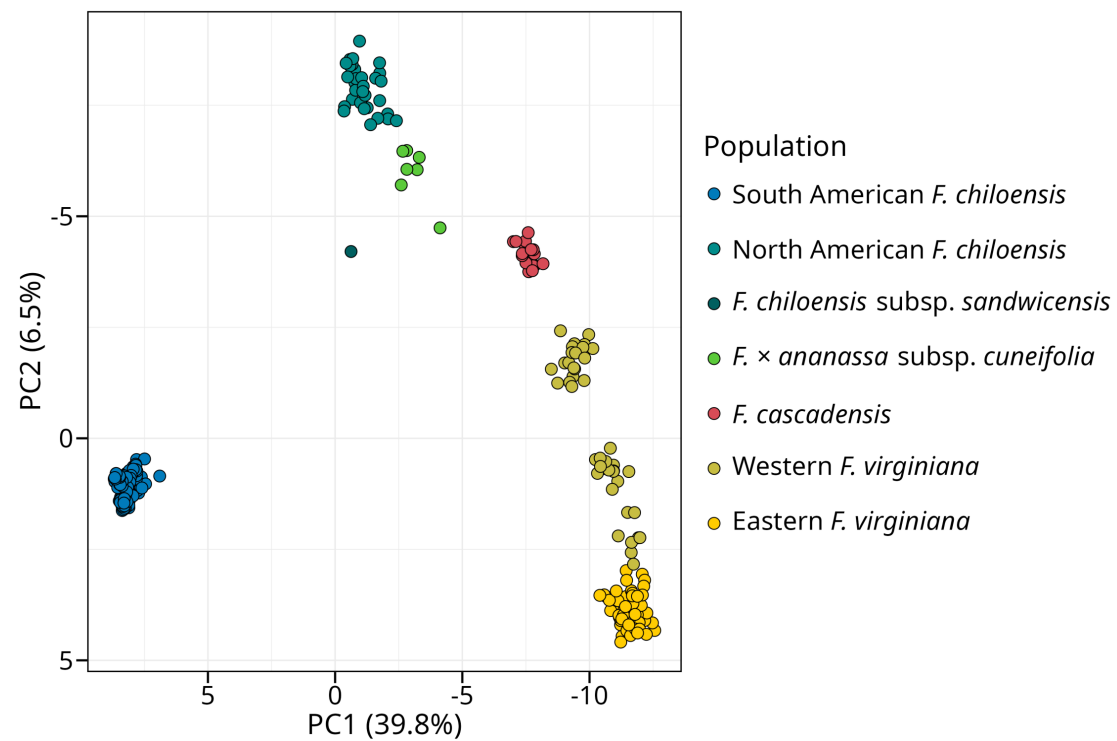


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Cultivars

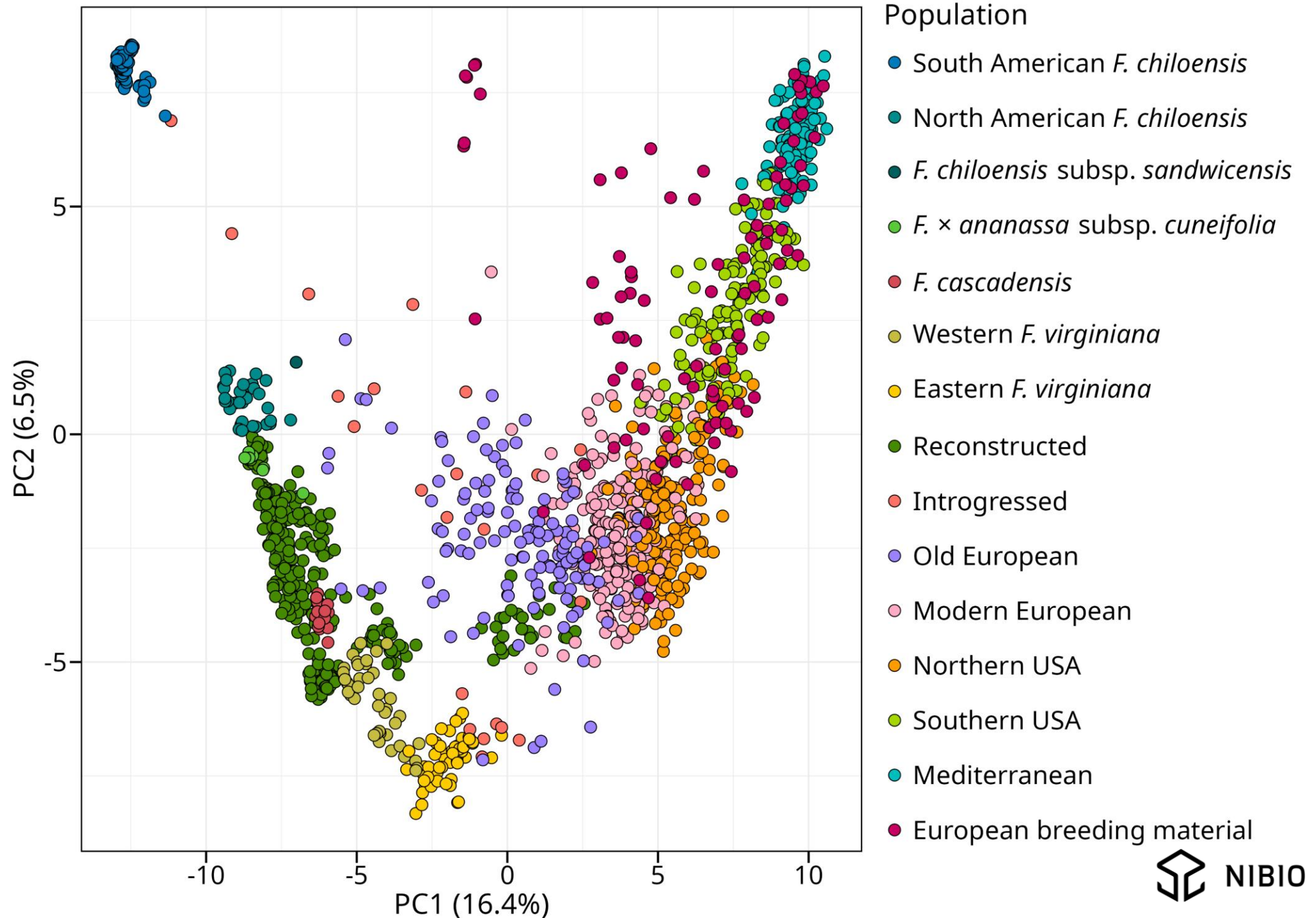


Wild

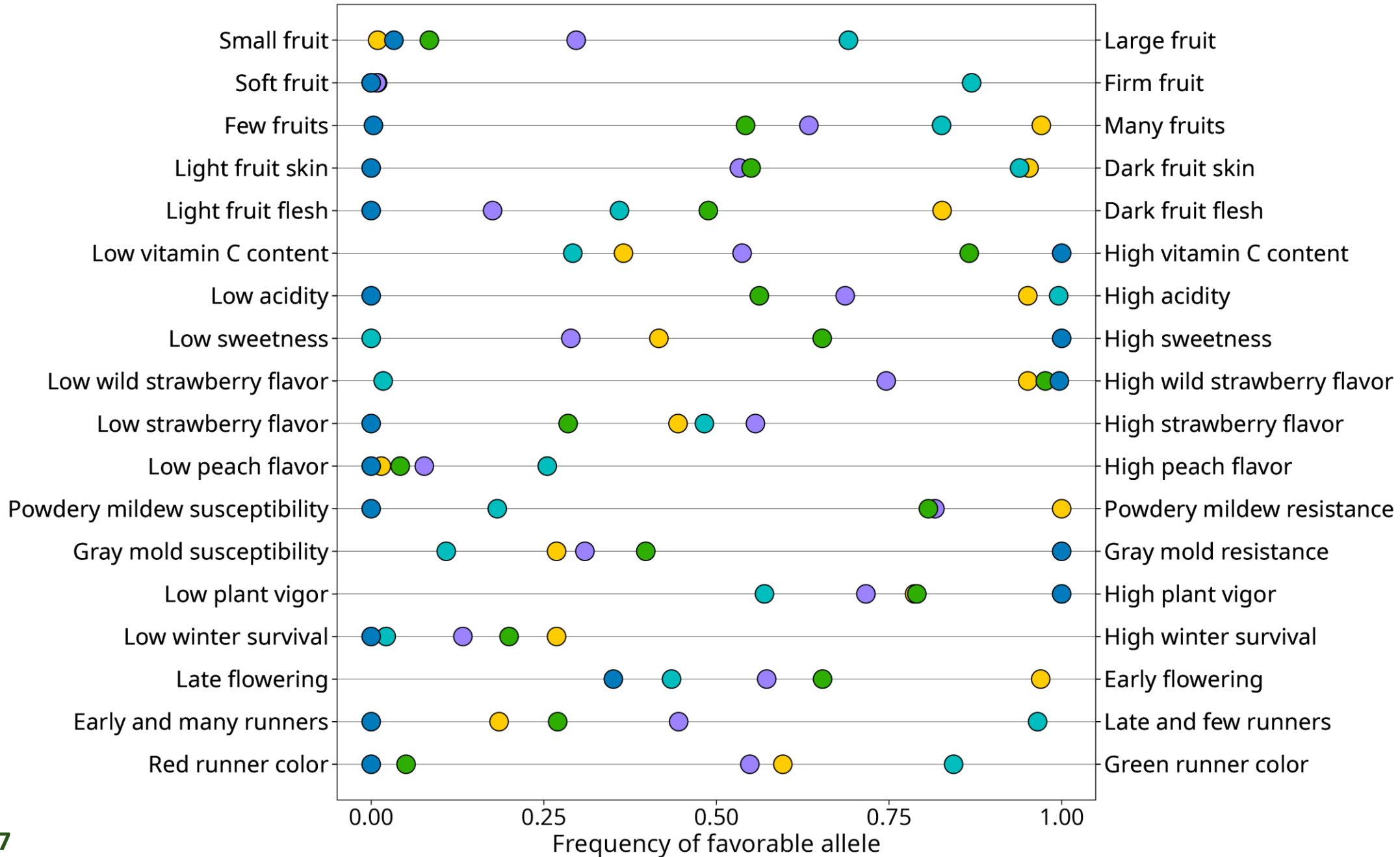


Cultivars & Wild

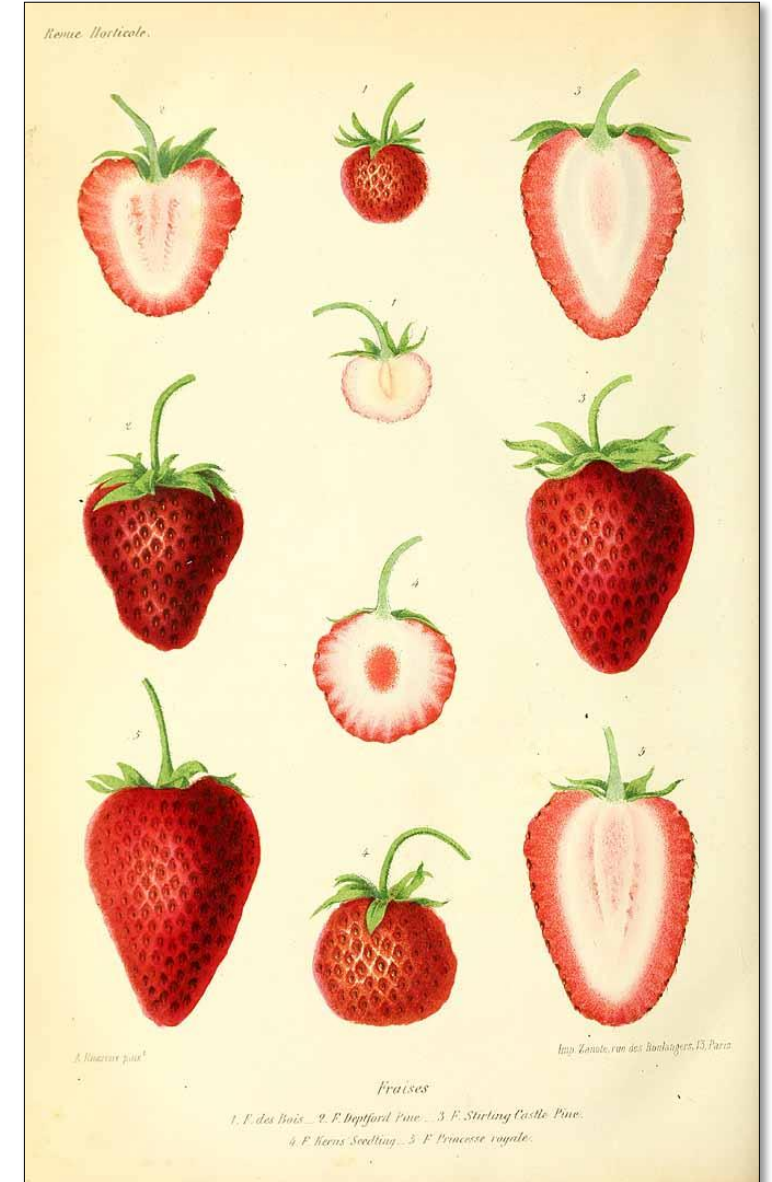
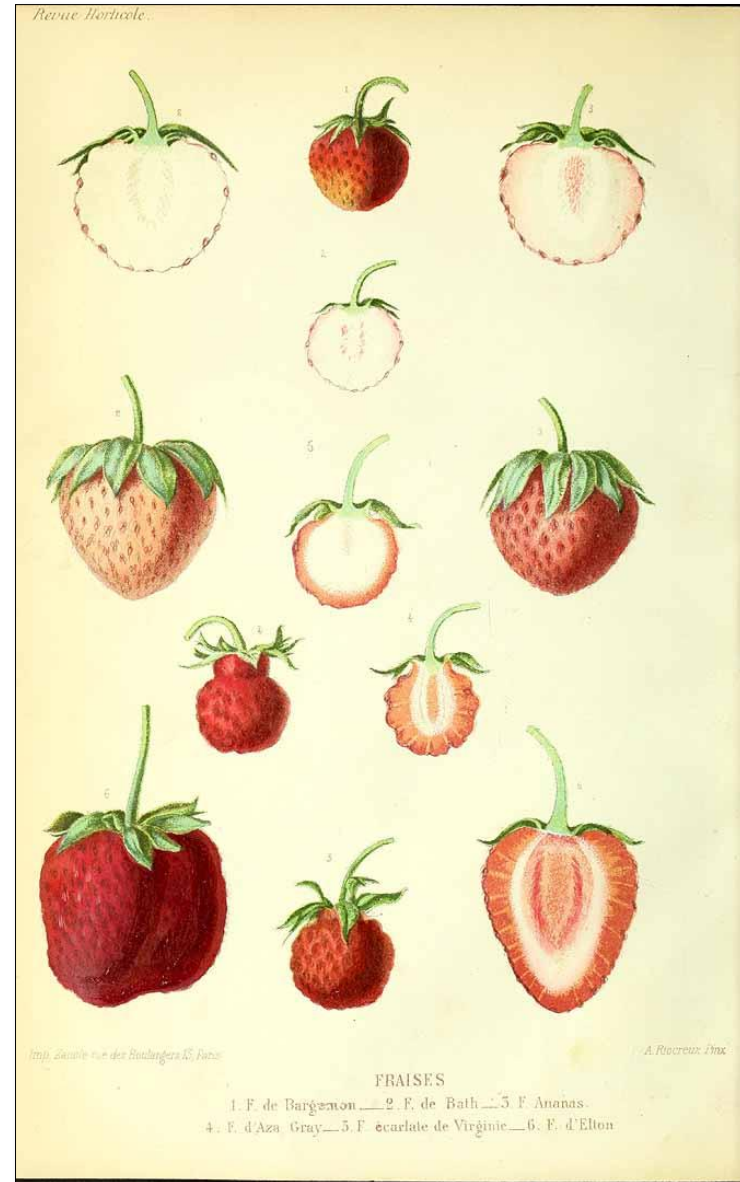
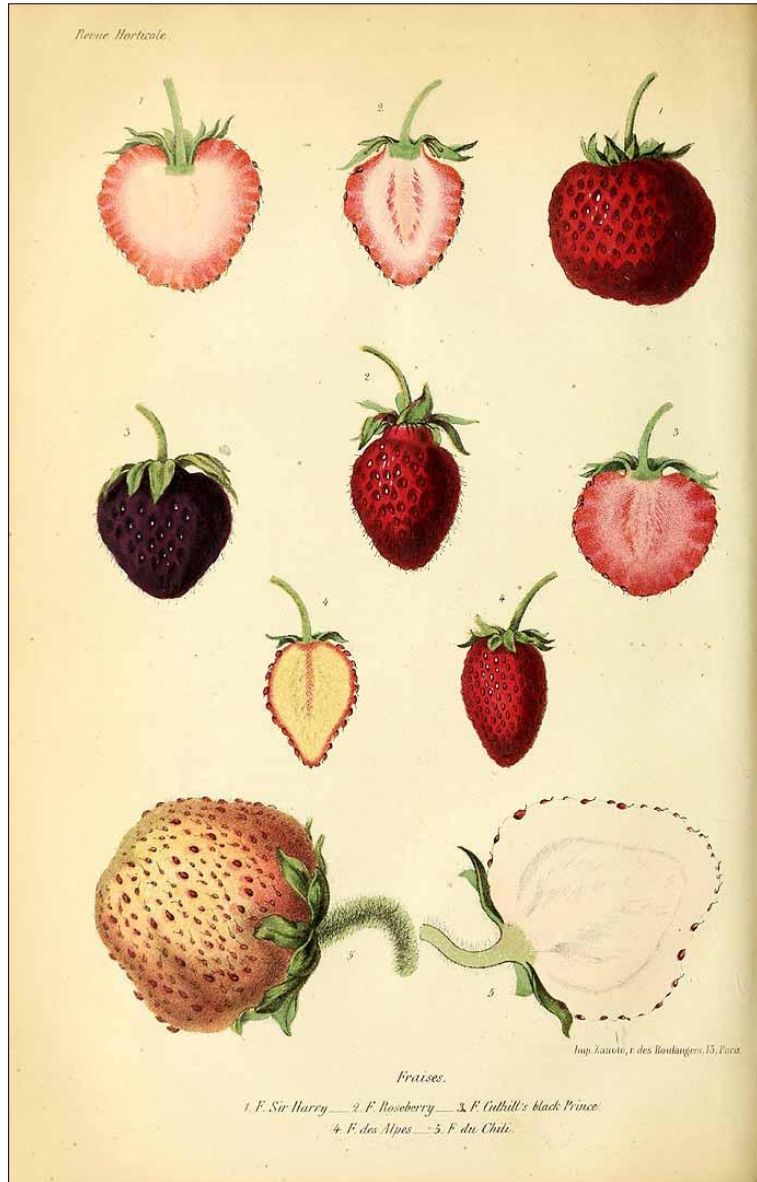
Fragaria



● South American *F. chiloensis* ● Eastern *F. virginiana* ● Reconstructed ● Old European ● Mediterranean



Strawberry diversity in the mid-1800s



Obtained from *Revue horticole* (Du Breuil & Élie-Abel, 1864, 1865) via the Biodiversity Heritage Library

Acknowledgments

Several BreedingValue partners, targeted call beneficiaries, and external industry provided samples for genotyping and made already genotyped accessions available for these analyses.

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