PEAS & LOVE

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Are there hidden gems in the gene bank collections with valuable traits that could be the key to future plant-based food?

- Approx. 2000 accessions in NordGen
- Modern peas have been bred for feed
- A collection of almost 400 accessions were selected

Old pea genotypes may have desirable qualities as plant-based food, but present challenges under field conditions

Benefits

- Nutritional value
- High protein
- Taste and colour

Challenges

- Quality
- Drought sensitivity
- Lodging

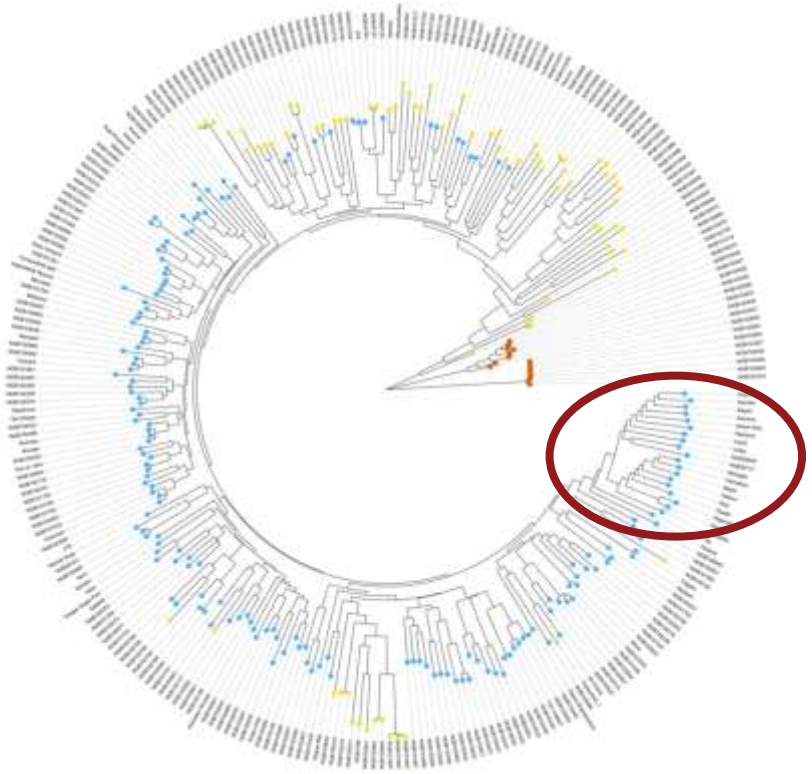
The PEAS & LOVE project is testing old genebank accessions for:

1. Genetic variation

2. Nutritional quality

3. Yield stability, drought tolerance and harvestability

Large variation in leaf type, height, phenotype and colour



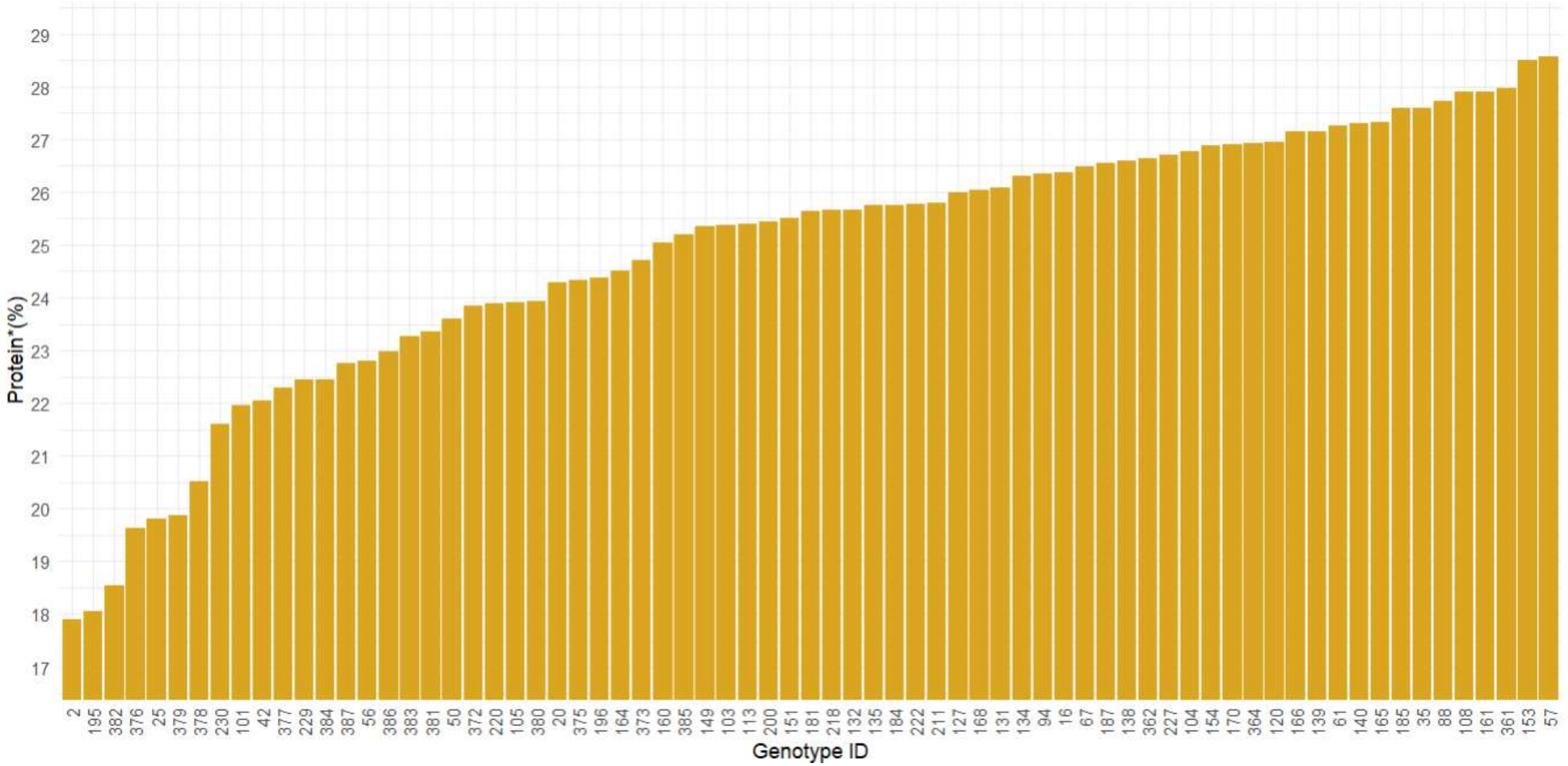
Knuhtsen et al. (submitted)

Ingrid

Foto: Jens Axel Knuhtsen

Brunært

Large variation in protein content – from less than 18% to more than 28%

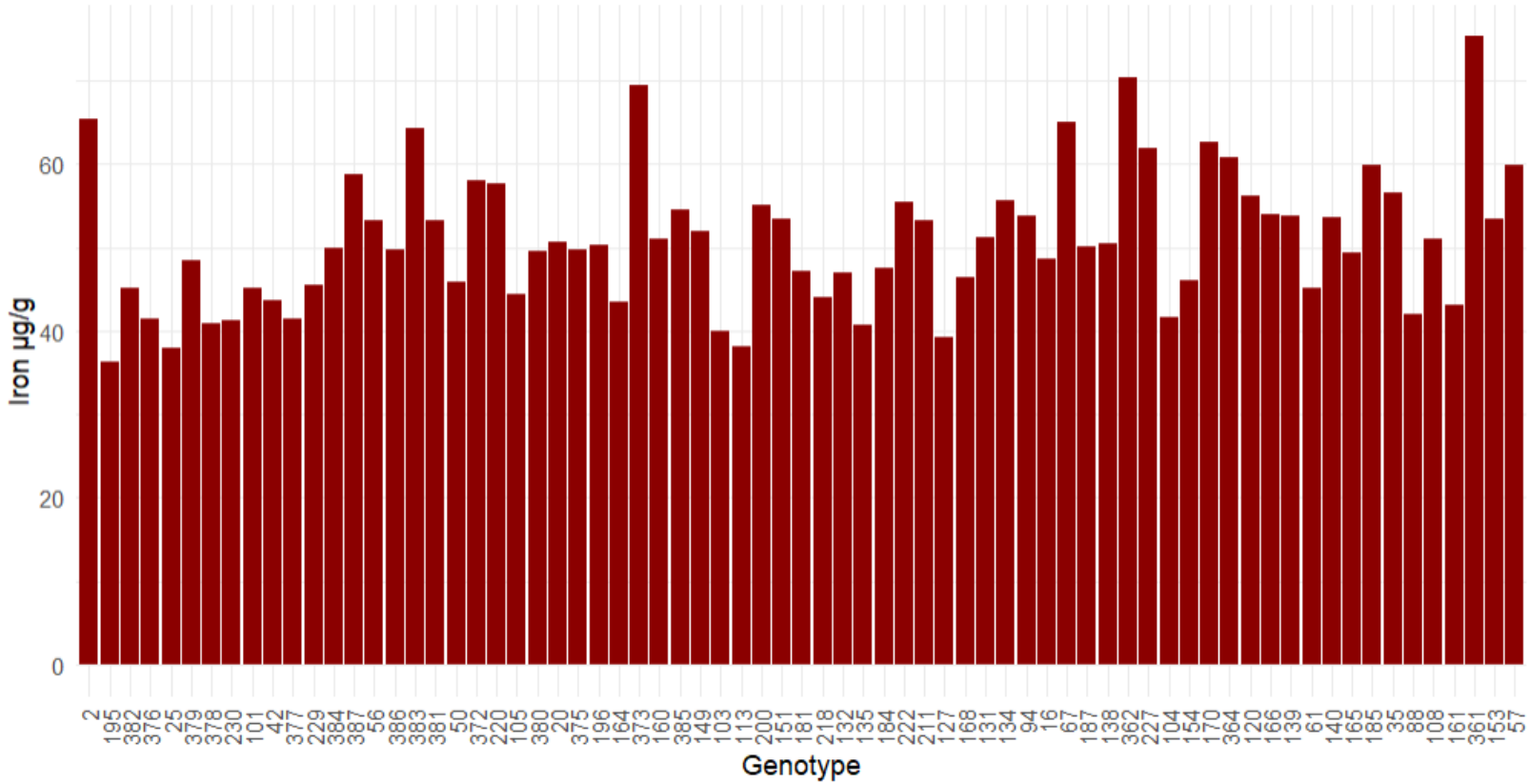


Knuhtsen et al., in prep

For direct consumption, both protein and mineral content matter

Generally, there is not much focus on other nutrients than nitrogen

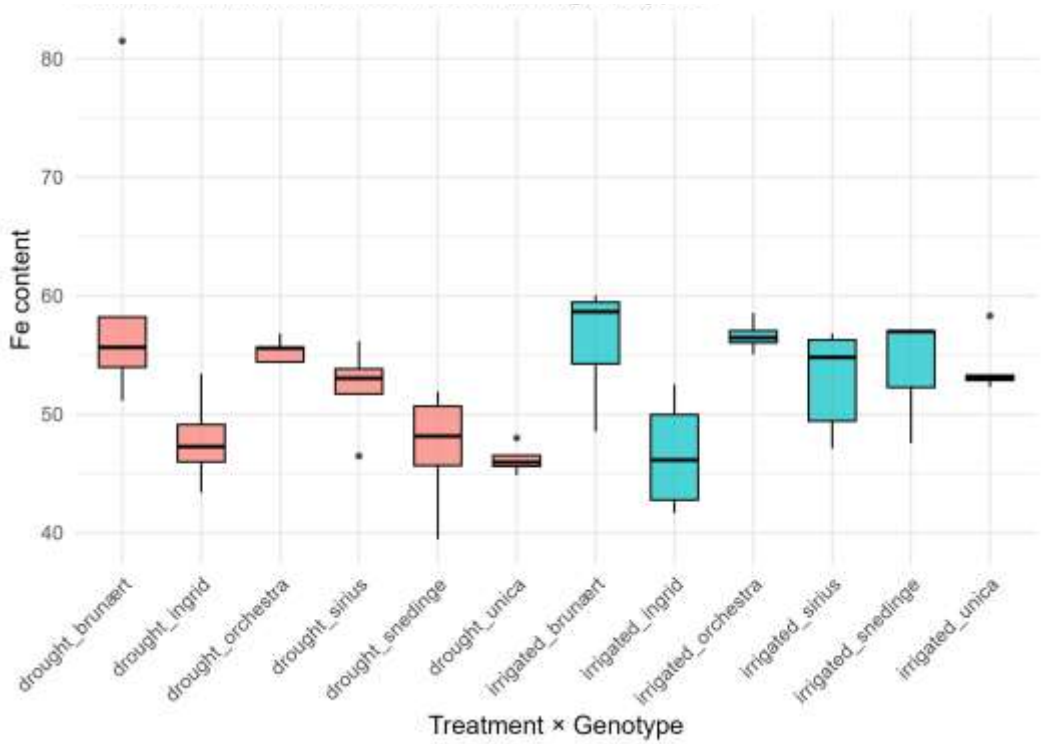
Genotype differences in micronutrients have been seen



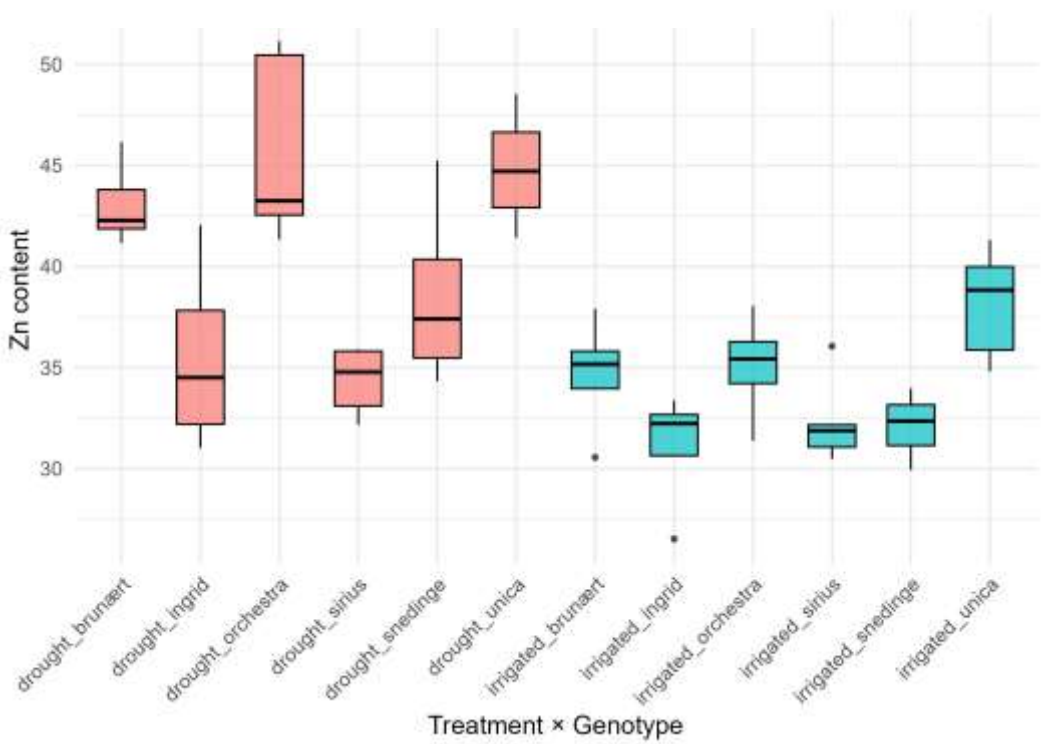
Knuhtsen et al., in prep

The micronutrient content can depend on both cultivar and treatment

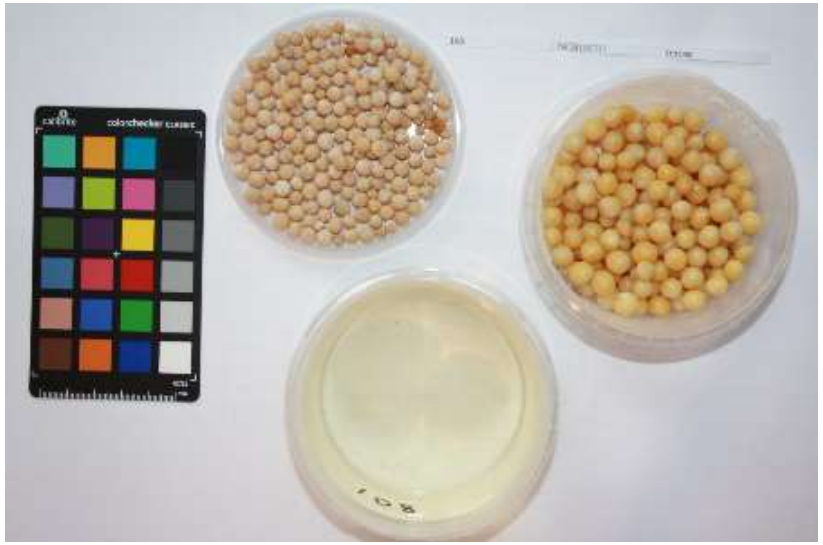
Iron (Fe)

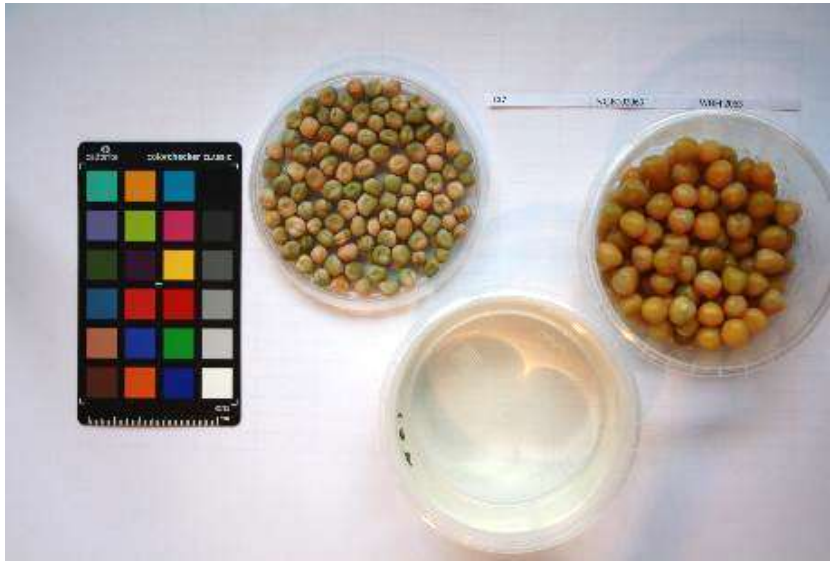


Zinc (Zn)



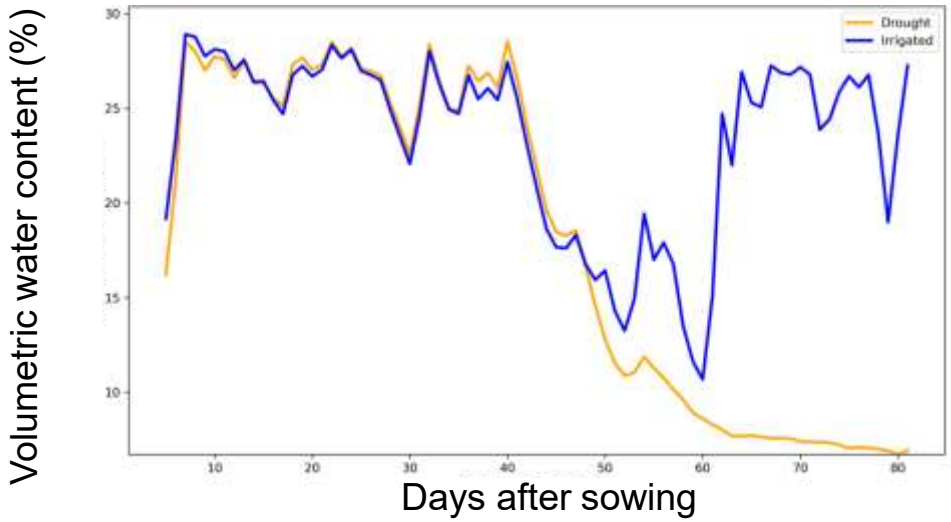
Taste, colour and shape is important for direct consumption

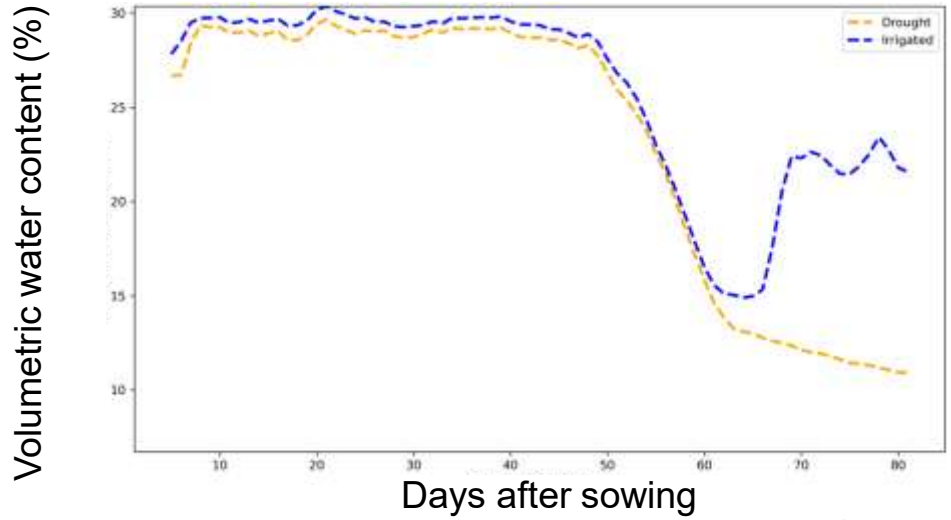




Has breeding for yield developed more robust genotypes in a changed climate?

Six different cultivars reflecting 100 years of breeding





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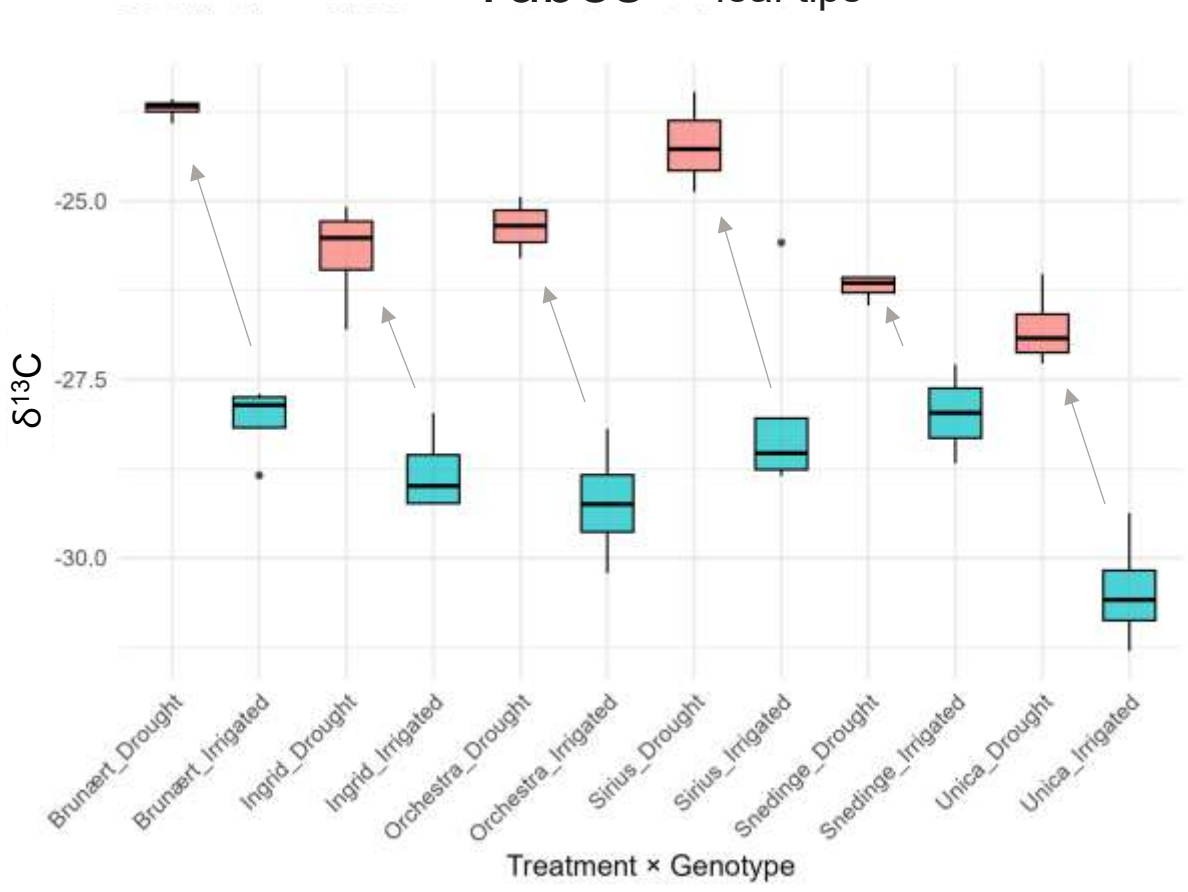
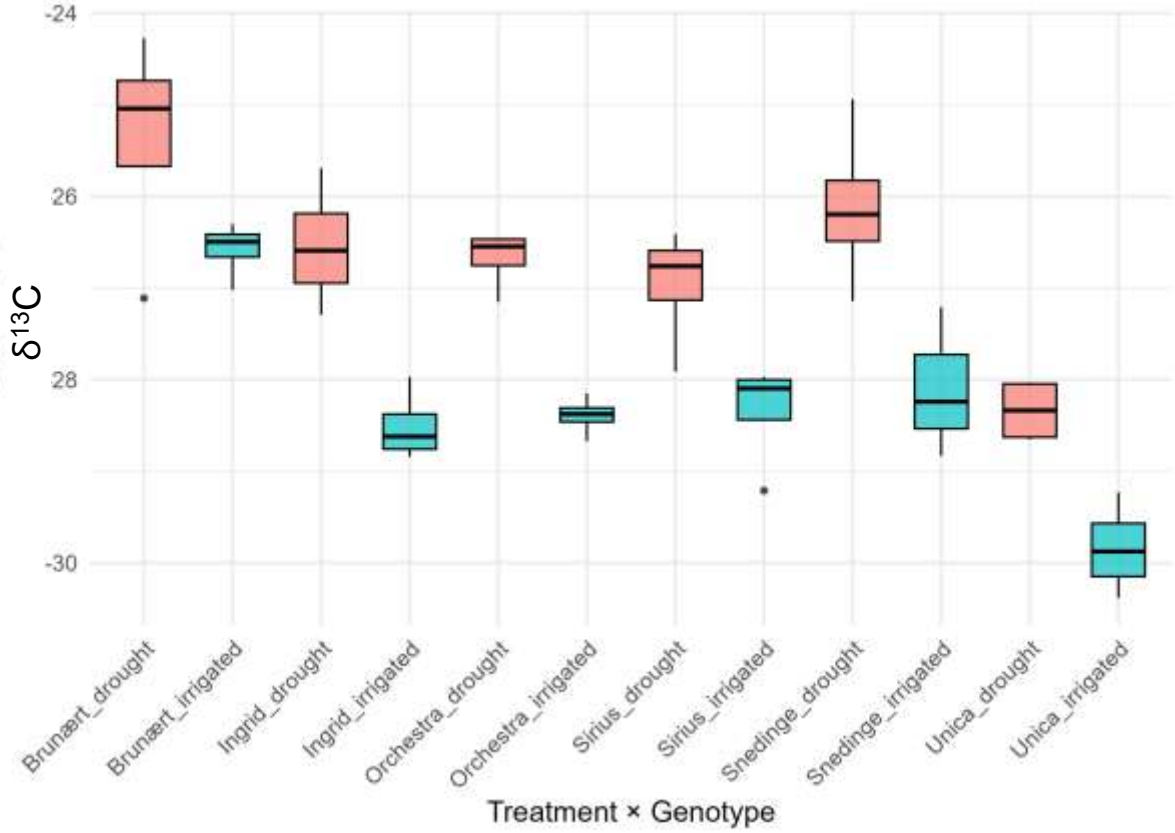
$\delta^{13}C$ is an indicator of drought stress

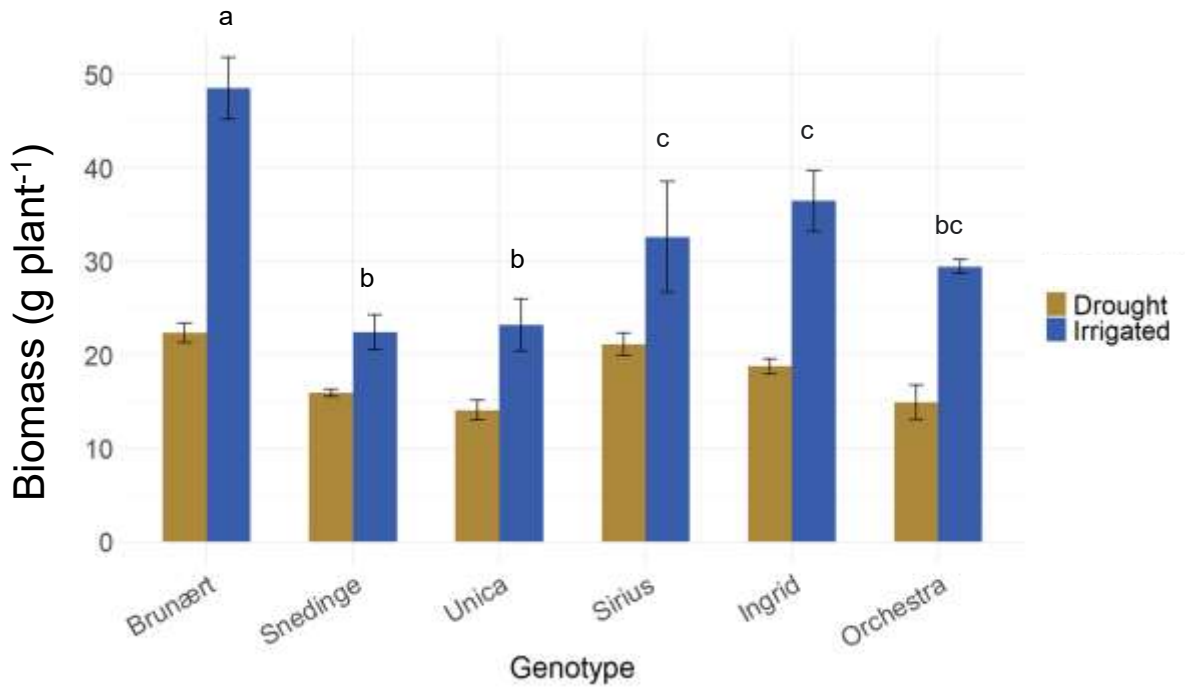
Tubes – leaf tips

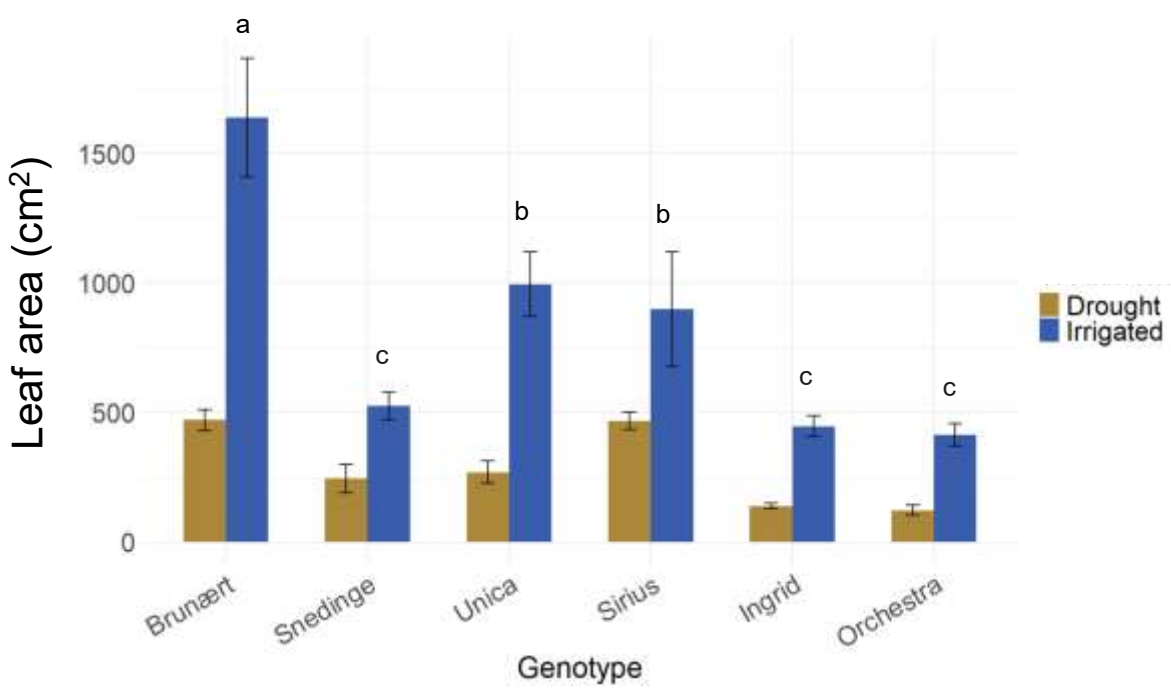


Field – dry peas



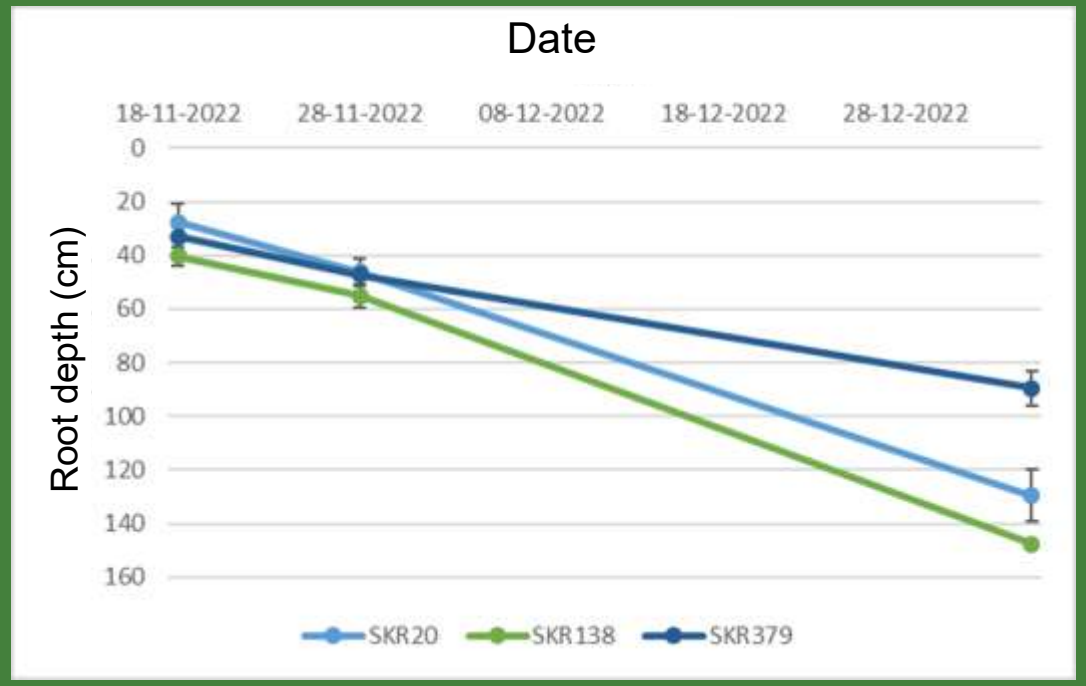
Growth is significantly affected by drought

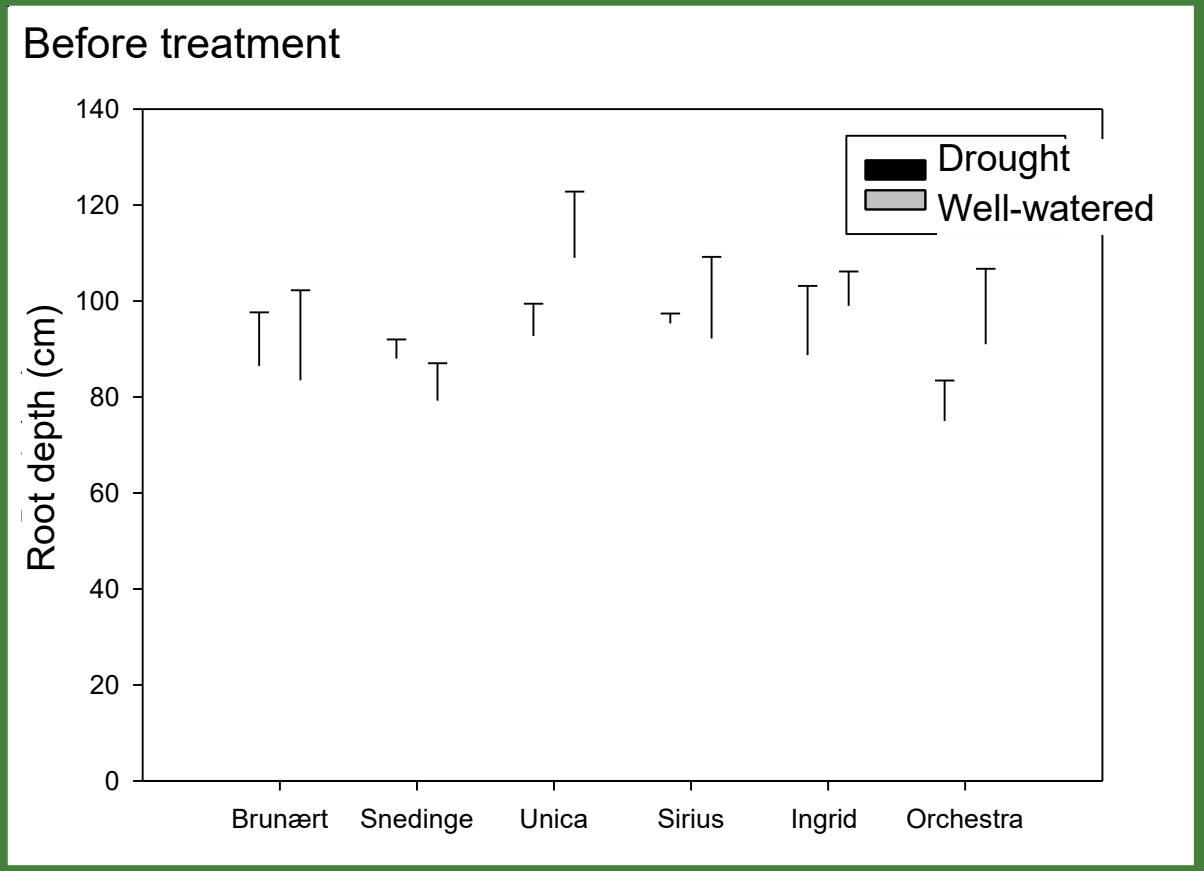


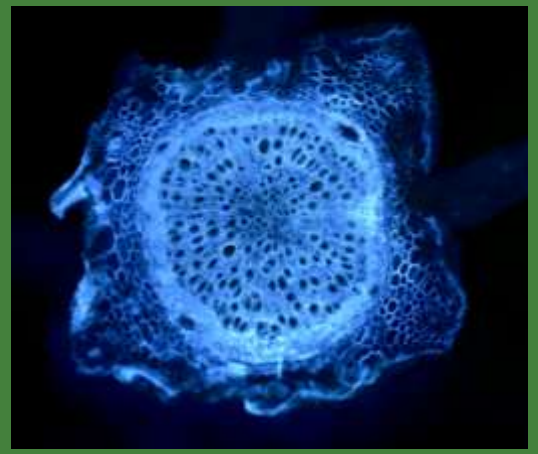


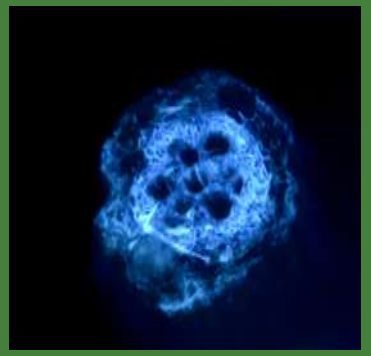
The largest effect in Brunært – the oldest cultivar

Rooting depth and root anatomy is expected to be related to drought tolerance



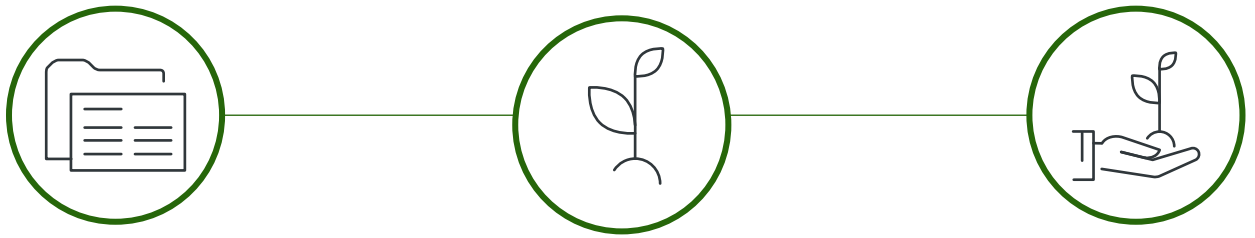






Xylem vessel size and number is related to water transport

… do old pea accessions offer new potential?



Quality	Agronomy	Sustainability
Focus on fertiliser	Be careful when choosing cultivars – large differences in protein, taste, colour, yield and robustness	Include grain legumes as main crop in the crop rotation

Thank you for the attention – and thanks to:

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gudp

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