

Plants – what Plants?

– Sustainable and healthy protein crops

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Plant Nutrients and Food Quality research group

Research group mission:

To provide new knowledge and recommendations regarding sustainable and resource efficient plant production that simultaneously delivers safe, authentic and nutritious food



Why is a transformation of our plant production needed?

- Food for billions
- Changing climate – extreme weather conditions and reduced food security
- Reduced availability of natural resources (arable land, minerals, water, energy)
- Increased focus on food instead of feed
- Urgent demand for solution that can deliver healthy, safe and sustainable plant-based foods



How?

- Increased land usage?
- Increased harvest yields?
- Harvest yield versus plant quality?
- Novel crops and varieties?
- Novel production methods?
- Novel technology?
- Sustainable solutions in a changing climate?



Plant production systems and technology



Sustainable crops and healthy plants

- Improved utilization of light, carbon dioxide, water and nutrients
- Reduced use of non-renewable resources
- Circularity - use of wastes and industrial side streams
- Climate tolerance
- Disease and pathogen resistance
- Stable yield
- Targeted production using less resources



Which crops for a plant-based diet?

- More than 300.000 different plant species
- 150-250 plant species are agriculturally relevant
- ~10 plant species deliver 95% of Worlds food and feed
- Wheat, rice and maize dominate globally (2/3 of the total yield)
- Barley, wheat, maize, grass and rape seed dominate in Denmark
- Urgent need for more protein crops



"Novel" crops for plant-based diets in a Danish perspective

Faba beans

Peas

Lupin

Lentils

Soybean

Oat

Quinoa

Amaranth

Buckwheat

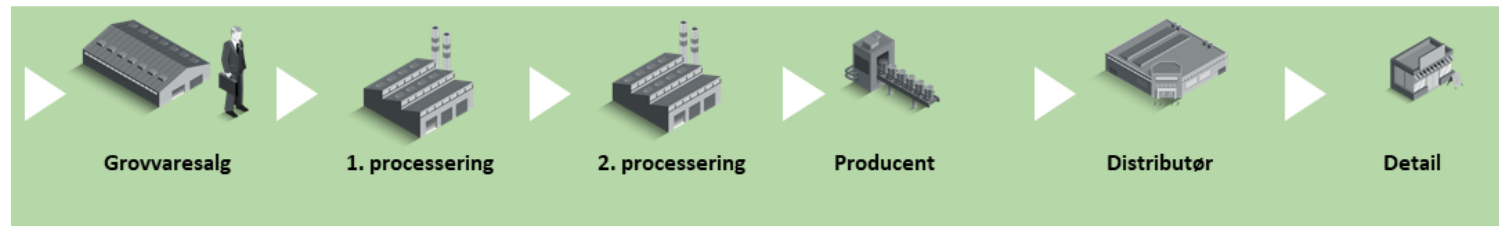
Large differences in:

- Fertilization requirements
- Tolerance to drought, weeds, diseases, pathogens
- Harvest yield
- Functionality
- Taste
- Nutritional value
- Protein content
- Protein quality
- Anti-nutrient content



Healthy plants = healthy foods?

- Food quality (examples): Protein, lipids, carbohydrates, vitamins, minerals, anti-nutrients, heavy metals, pesticides
- Reduce the requirement for post-harvest processing
- Optimization starts in the field – improve quality during plant growth
- Plant quality is controlled by agricultural management practice
- Use biology and agronomy!
- Interdisciplinary collaboration!



Peas & Love (2022-2026)



- Pea yield stability, taste and quality – potential of old cultivars for increased organic pea production
- **Project coordinator:** Dorte Bodin Dresbøll


- **Participants:**

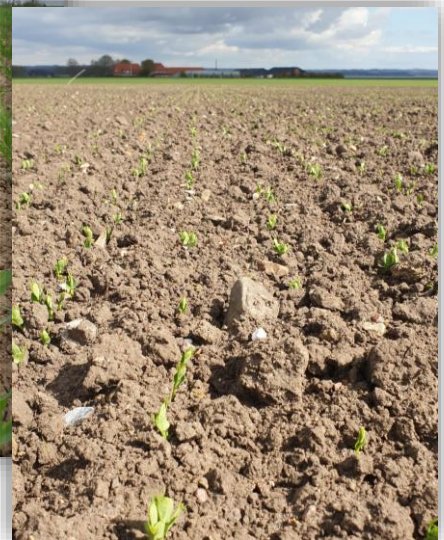


- **Funding:**



AQRIFood (2022-2024)

- Advancing the Quality of plant-based Raw materials and Ingredients for Food applications
- **Project coordinator:** Christian Bugge Henriksen
- **Participants:** See all 19 here www.aqrifood.dk
- **Funding:**  Innovation Fund Denmark



Linda K. Nielsen

Thank you for your attention

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